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MAY/JUNE 1998

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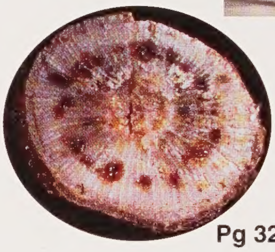

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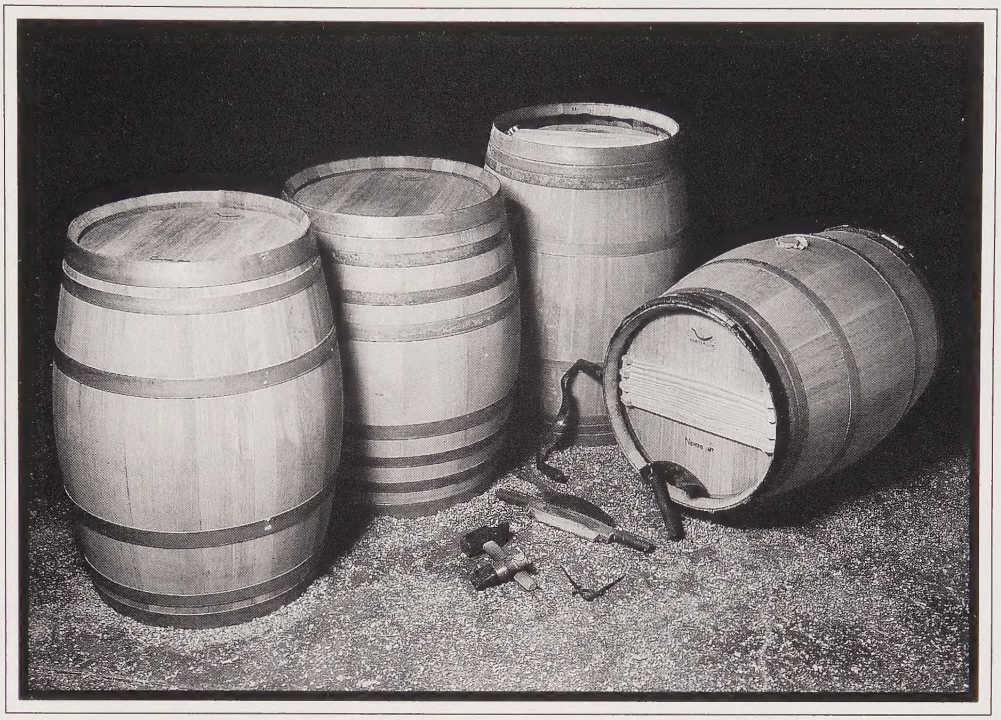

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WINE INDUSTRY ECONOMIC PITFALLS

How to make a SMALL FORTUNE IN THE WINE INDUSTRY

by George Schofield

The wine industry is inordinately vulnerable to economic pitfalls. The old adage that the best way to make a small fortune in the wine business is to start with a large one is, unfortunately, more often true than not.

Six factors, which define the nature of the industry, are at the root of the economic difficulties: size, fragmentation, agri-business issues, time, asset-intensity, and distribution limitations.

Size

The wine industry is relatively small. Total annual retail sales are only about $15 billion, and recognizing that most wineries sell through wholesalers at a 50% discount, the actual aggregate sales basis for the U.S. wine industry is only about $8 billion.

Several companies listed on the New York Stock Exchange have total revenues which are multiples of the revenue for the entire wine industry (Ford — $147 billion; IBM — $76 billion; AT&T — $52 billion). As a result, from a political and economic viewpoint and in relationship to vendors, distribution channels, and retail outlets, wine doesn't have much clout.

Fragmentation

Compounding the clout issue is the problem of fragmentation in the industry. Although a few mid-sized companies do exist, most of the 800 wineries are small, proudly independent, family enterprises in the range of $500,000 to $5 million in sales. They are often at the mercy of large wholesalers and retailers and of economic conditions.

Frequently, the owners of these 800 wineries are unable to agree on issues, fund research, or present a united front on controversial issues. In addition, the industry is divided between 5,000 grapegrowers and wineries who have similar conflicts, so fragmentation has, on occasion, severely limited potential.

Agri-business

An obvious factor, whose implications often get overlooked, is that the wine industry is an agri-business, with agricultural business risks involving climatic variations and the effects of disease and pests.

Equally disturbing can be the impact of over-planting and very large annual variations in crops. When short or bumper crops occur in consecutive years or in a sequence of three of four years, the real and psychological impact can be particularly great.

Time

Vines require several years after planting before producing any crop and six years for a mature crop. Moreover, wine inventory is deliberately aged for periods ranging from a few months to several years.

Time also affects the wine industry in other odd ways. The planning horizon from initial planting to consumer sales can be eight years. Most industries have difficulty predicting with lead times of one or two years or managing inventories within a 30- to 90-day cycle versus premium wine inventory turns of two or three years.

Asset intensive

The wine industry is one of the most asset-intensive businesses in the world. Generally, an industry is considered capital intensive if $1 of assets is required to generate $1 of sales. Winery facilities alone generally are at this ratio. Inventory requirements normally raise the factor to $2 of assets per $1 of sales, and vineyards further compound the ratio to $3 to $1.

Financing any decent size integrated winery generally does require a small fortune. To earn an attractive return on such an investment can require, at a minimum, a long time or a miracle.

Distribution limitations

As a result of the 21st Amendment to the Constitution, the normal U.S. benefits of a free flow of commerce between states do not apply to the wine industry. This is a critical limitation and discrimination. Because each state can restrict product flow from every other state, and regulate licensing, taxation, labeling, and other aspects of commerce almost completely autonomously, wine sales distribution within the U.S. is confusing and often chaotic.

Wine industry pitfalls

The wine industry is inherently different from other industries, and experience suggests that, to be successful, those in the industry must avoid some common, major pitfalls:

1. Misunderstanding short-term production and sales trends.
2. Growth by volume at expense of price.
3. Dependence on wholesalers for creative selling.
4. Underestimating the growth capacity of competitors.
5. Inordinate use of debt (and equity).
6. Unreasonable expectations.

These concepts will be further analyzed and explored in a series of articles to be published in *PWV*. The intent is both to create an awareness of common problems and also to spur positive thinking for ways to avoid them. The first of these articles follows.

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WINE INDUSTRY ECONOMIC PITFALLS

PART I

Misunderstanding short-term trends

by George Schofield

Myopia (near-sightedness) is a disorder of the eye in which those afflicted see clearly only those things nearby. A similar phenomenon affects many business managers and owners as they view business conditions.

In the forest-products industry, for example, when housing starts and wood exports are expanding, such myopic managers believe that everything is wonderful and good times will last forever. Expansion rules; they build new sawmills and plywood mills, hire more people, pay overtime, and schedule double and triple shifts.

Often, however, within 12 to 18 months, the same people are morose as housing starts decline, imports rise, and interest rates jump. The clamor arises to close the mills and fire employees, and they cut prices to stimulate demand. "Everything is terrible," they say. "The future is dark, and all this doom will continue forever."

Myopia in the wine industry

After the generally short 1990 crop, California wine grape harvests of 1991 and 1992 were very bountiful. By early 1993, the bulk wine market was awash with surplus wine, including a reported three million gallons of bulk Chardonnay. Bulk wine prices plummeted, and grape prices started to retreat.

Wineries were generally making few new long-range contracts to buy grapes. Some wineries were canceling or significantly reducing commitments for 1993 purchases. Plantings virtually ceased, and some regions experienced a net reduction in grape acreage because of removals.

Few people in 1993 or 1994 were looking at anything but the spot markets; they ignored long-term statistics and trends. Hardly anyone recognized that grape yields per acre in 1991 and 1992 were well above normal or that the phylloxera impact in the North Coast, particularly Napa, was having a devastating effect.

Also being ignored was the double-digit growth of premium varietal wine sales, which had been on-going since 1982. The short-term overproduction of 1991 and 1992 masked reality, so surpluses were expected for the indefinite future.

While this fog was prevailing, two of the next three crops (1993-95) were relatively short and premium varietal wine sales continued strongly. Steadily, and imperceptibly at first, surplus bulk wines were consumed. Nevertheless, the prevailing thinking continued to be that heavy planting and heavy yield would result in on-going over-production of grapes and wine.

Analysis changes opinions

Failure to distinguish wine market segments contributed significantly to the over-production misconception. The overall wine market was flat or growing at a very modest pace. Those who analyzed the numbers could see that generic wine sales were actually declining in volume, but that premium varietal wines were continuing to grow at 10%+ rate, well above the level of the national economy and of most industries. Consumers were, indeed, drinking less, but they were also drinking better.

Equally important, a significant transition was made. The premium varietal sector, which first exceeded the generic sector in dollar value of sales around 1986, moved ahead in pure volume around 1993. Premium wines became pre-eminent. Those who were focused on premium wine grapes and varietal wine production saw a dynamic market, despite the temporary inventory surplus from 1991 and 1992.

From surplus to allocation

By 1995, the excess inventories of bulk and cased wines were generally depleted. Recognition slowly dawned in 1996 that surpluses were gone. Early releases of vintage wines began to occur. With the short crop of 1996, reality finally struck. Wineries began placing some premium wines on allocation, rationing supplies to key accounts. Some wineries just ran out of key products for several months.

Importation of bulk wines began, particularly Merlot from France, Chile, and Argentina. California grape prices and bulk wine prices escalated to record levels.

In late 1996 and 1997, wineries began signing "pre-plant" contracts with grape growers. If the grower would plant certain varieties, the wineries would enter into long-term contracts with attractive terms. Frequently, these terms included minimum prices and covered periods of 10 years or more beyond the first crop.

In a strange turn, wineries that wouldn't buy current vintage grapes in 1993, were, in 1996, agreeing to buy grapes which had not yet been planted. In addition, a few wineries were buying vineyards or plantable land to secure better control over grape supplies.

Back to surplus?

In the spring of 1997, indications first appeared that the 1997 crop would be large. As the year progressed, climatic conditions in most grapegrowing regions were close to ideal. As a result, the estimates of the large crop grew. Preliminary results indicate that most wineries were very successful in replenishing normal inventory levels.

Meanwhile, beginning in March 1996, a decline in the growth rate of premium wine sales occurred. In October 1996, a negative growth period developed which continued into early 1997, though a slow recovery now seems underway.

An analysis of INFOSCAN data indicates that not only have imported wines not experienced the same decline, but imported wines accelerated their growth rate, particularly in 1997. Although prices of domestic wine appear to have increased slightly more than imported wines during 1996 and 1997, the disparity doesn't seem capa-

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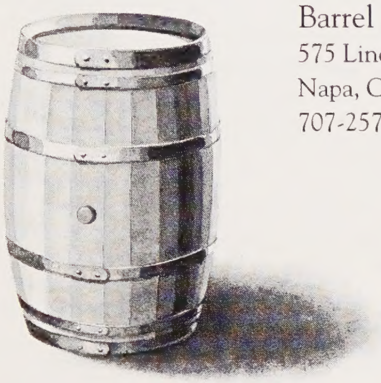

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ble of rationalizing the difference in the growth rate of sales.

The answer would seem to lie, not in market demand, but in wine availability or lack thereof. Certainly, causes exist for concern. However, those predicting enduring surpluses on the basis of a weak wine market or overplanting, may be overemphasizing the short-term and working with gross rather than net statistics.

Not only did the size of the 1997 grape crush catch many wineries by surprise, the length of harvest was much shorter than expected. Many varieties matured at the same time in a condensed crush period which averaged 20% shorter than normal (eight to 10 weeks rather than 10 to 12).

With more grapes and less time to turn cooperage around, most wineries ran out of capacity. With this recent experience heavily in the forefront of thinking and with the return of concerns about overplanting, major capacity increases are planned.

Considering expansion?

The reality of the need for such expansion ought not to be automatically assumed. Providing capacity for peak annual production in abnormal circumstances is expensive and could be inefficient. Several years of growth may be required to utilize such new capacity on a normal basis. Some sort of contingency plan, surge capacity, safety valve, or insurance plan may be a more economical solution for short-term surpluses.

Everybody wants to recognize and understand trends correctly. The following tips will help improve these skills.

1. *Find the middle ground*

No one year is normal. Base thinking and projections, not on peaks and valleys, but on likely future events (*e.g.*, grape production based on normal "historical" yield, existing acres, new planting less removals, and predictable productivity increase). Think and project in five-year terms, expect no one year to be right on, but the five-year trend line and average should be close.

2. *Take a course in statistics*

Learn or relearn the basics: fitting trend lines to plot points, understanding standard deviations, the use (and limitations) of averages.

3. *Stay current with best data*

Regularly and systematically gather

data from the most reliable current wine industry statistics. Use quarterly or preferably monthly wine data whenever feasible (wine sales). Graph the data over at least a 24-month time horizon.

When only annual data are available, use a 10-year time horizon. Use key components (individual varieties, specific regions, etc.) rather than meaningless averages. Correlate the available data to get more useful categories (*e.g.*, grape yields per acre by dividing annual production by bearing acres — weighted by age of vine).

4. *Draw conclusions*

Rationalize the results with other reports, opinions, and your own experience and observations. Document your conclusions. Modify and adjust through the critique of peers and industry experts.

5. *Analyze the risks*

The relative risks of future variations may be quite different. For example, generally the risk of having too much inventory is greater than having too little. Often excess inventories can only be moved by price reductions which reduce profit margins broadly, while too little inventory simply means lost sales opportunities and lost extra profit.

Lost potential can be easier to bear than a drop in profit, particularly if selling prices of the wine you do have can be raised as a partial offset for missed sales. This mitigation was actually implemented by many wineries in late 1996 and the first half of 1997.

6. *Be decisive*

Have the courage of convictions based on sound, reviewed analysis. But, also have contingency plans to mitigate the effect of the unexpected. Measure success as a relatively high "batting average" over a five-year period.

Good management involves the capacity both to take advantage of opportunities and to avoid pitfalls. Survival depends on avoiding fatal pitfalls. The inability to identify and correctly interpret short-term trends and conditions is one of the most common pitfalls experienced in the wine industry. ■

George Schofield is a financial consultant with extensive winery and vineyard experience. He is a CPA and has a MBA degree from Harvard University. He served ten years as CFO of Robert Mondavi Winery before establishing his own consulting business in St. Helena, CA, in 1984.

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CENTRAL COAST VINEYARD TEAM
Positive Points System

SUMMARY OF GOALS AND OBJECTIVES

Successful, sustainable grapegrowing is comprised of several equally important aspects. A program that integrates the best management practices relating to pests, soil, water, and viticulture will result in the production of high quality wine grapes. Encouraging growers to use sustainable farming methods, while maintaining or increasing wine quality is the primary objective of the Central Coast Vineyard Team Positive Points System protocol.

The Central Coast Vineyard Team was created in 1996 to enable a group of 16 growers, vineyard managers, winery personnel, and advisors from the University of California to work together in a "co-learning" environment. The team developed this Positive Points System (PPS) which describes sustainable vineyard management practices for the Central Coast and provides a means to measure adoption of environmentally enhancing farming practices over time.

Team grower members farm approximately 17,000 acres within the three counties of Monterey, San Luis Obispo, and Santa Barbara. At the start, the group members financed the project, but they have just finished the second year of a three-year grant from the California Department of Pesticide Regulation. In addition to creating the PPS, the team has been using the protocol to encourage themselves and fellow Central Coast grapegrowers to increase their points, like grades on a report card, from year-to-year.

Vineyard pest management is dynamic. Growers must determine the safest and most effective practices for their particular vineyard. Integrated Pest Management includes regular monitoring of vines for pests or damage, the use of best management practices to prevent pest buildups or damage, and the responsible use of control techniques.

Sustainable farming methods that minimize incidence and spread of insect pests, disease, and weeds are outlined in the protocol. The endeavor is to reduce (or eliminate) chemical inputs while maintaining good production and fruit quality.

Good stewardship of the land is a prerequisite to good farming as soil structure and nutrient content affect vine vigor. A healthy vine can often tolerate more pest damage and compete better with weeds than a less healthy one.

Conservation of the naturally occurring beneficial soil characteristics is essential for sustainable farming. Erosion control, soil fertility monitoring, and the use of cover crops and compost contribute positively to the maintenance of good soil structure and nutrient content.

Good water management also results in healthy vines and more uniform maturation of the crop. An effective program of monitoring water quality, water use, and uniformity of an irrigation distribution system can lead to conservation of water resources while meeting vine water needs.

A well-designed on-farm water management system prevents off-site water movement and non-point source pollution of surface and ground waters. The goal is to achieve the most beneficial and efficient use of applied irrigation water.

Sound viticultural management practices use natural conditions to promote healthy vines. Appropriate decisions regarding vine spacing, density, row orientation, trellis type, and rootstock can reduce or avoid many vineyard problems. Choosing the best *V. vinifera* cultivars and clonal selections for the growing area will certainly enhance resultant wine quality. Good canopy management also insures sound fruit.

The very best wine quality attainable is one of the ultimate achievements. As harvest is the culmination of an entire year of work in the vineyard, the condition of grapes upon arrival at the winery is critical. The goal is to provide the winery with grapes in the best possible condition and possibly to surpass the winery's expectations.

Wine quality is founded in the vineyard. The grower and winemaker work together to produce a particular wine style. All vineyard employees are part of the team working to produce the best grapes possible. An important goal of the protocol is to promote the vineyard as a safe and desirable place to work.

Continuing education is an ongoing process. Vineyard and winery personnel need to learn about and stay aware of the best techniques and latest developments regarding worker safety, sustainable farming, quality grape growing, and quality wine production.

Public perception of grapegrowing is an important part of wine marketing. Educating the public about the positive aspects of sustainable grapegrowing is essential.

The Positive Point System is designed to be used as a tool in an integrated farm management plan that guides growers toward more environmentally safe practices. While higher scores indicate more progress towards environmental enhancement, an improved score from one year to the next is more desirable. An improved score indicates that a grower was able to include more sustainable techniques for that year. For example, a dry-farmed vineyard would not earn any points in the water conservation section, but might be using all sustainable practices and would still never earn over 800 points. Comparison of total scores is not as valuable as demonstrating an improvement from year to year. ■

CATEGORY		TOTAL POINTS
I.	Pest Management	200
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Positive Points System Protocol

Mission Statement: The Central Coast Vineyard Team will identify and promote the most environmentally safe, viticulturally and economically sustainable farming methods, while maintaining or improving quality and flavor of wine grapes. The team will be a model for wine grape growers and will promote the public trust of stewardship for natural resources.

I. PEST MANAGEMENT

OBJECTIVE: The vineyard pest management situation is dynamic. Pest outbreaks, pest resistance problems, and new sampling and monitoring techniques require that each grower determines the safest and most effective practices for his/her particular vineyard. The objective is to understand which pests can cause damage and under what conditions damage is likely to occur.

An Integrated Pest Management (IPM) program includes regular inspection of vines for pests or injury, use of the best crop management practices to prevent pest buildups or damage, and responsible use of control techniques that are applied only when necessary.

A. Insect Monitoring, Management, Control

Goal: To use sustainable farming methods that minimize insect buildups or damage to vines and crop, minimizing the need for pesticide treatment.

If grapes can be grown without broad-spectrum insecticides, take full points for Section A. **[51 pts]**

1. Are you familiar with insect pests found (and likely to be found) in your vineyards? **[7 pts]**

2. Are you knowledgeable about life cycles of your vineyard pests? **[4 pts]**

3. Are you familiar with natural predators and beneficial insects that prey upon or parasitize your pest species? **[4 pts]**

4. Do you track or have access to weather data and degree days during the season? **[4 pts]**

5. Is there a regular monitoring program in place to detect the presence and determine population dynamics of vineyard pests? **[4 pts]**

6. When possible, are alternate host plants of a pest species removed (ex. Bermuda grass, elderberry for sharpshooters and leafhoppers, or mustard for orange tortrix)? **[4 pts]**

7. Is the specific cover crop chosen according to the nematode situation, (ex. root lesion or citrus nematodes/Bland brome or barley; winter cover crops that inhibit these nematodes)? **[4 pts]**

If your vineyard does not have these nematodes. **[4 pts]**

8. Are pheromone traps, sticky tape, or sticky cards used to trap and monitor insects? **[4 pts]**

9. Are sprays timed to control the appropriate insect brood hatch for maximum effectiveness? **[4 pts]**

10. When spraying is needed, do you first opt for the "softer" insecticides or reduced risk materials that are easier on beneficial insects? **[4 pts]**

11. Are selective materials used instead of broad-spectrum

insecticides? **[4 pts]**

12. Are "hot" spots in the vineyard identified and used as indicators for spraying decisions (*i.e.*, spraying on a block-by-block basis, instead of spraying the entire vineyard)? **[4 pts]**

B. Disease Monitoring, Management, Control

Goal: To use sustainable farming methods that minimize incidence and spread of diseases that result in damage to vines and crop, and to work toward reducing the use of chemicals for disease control. If wine quality is maintained by a disease management program where chemical use has been reduced, take full points for Section B. **[31 pts]**

1. Are you familiar with the diseases that are likely to be found in your vineyards? **[6 pts]**
2. Do you know the causal agents of these diseases and their method of spread? **[4 pts]**
3. Are regular scouting programs in place to monitor for presence and severity levels of diseases that are likely to occur in your vineyards? **[5 pts]**
4. Are the Grape Powdery Mildew Index or Botrytis disease pressure model used to help schedule spray applications? **[4 pts]**
5. Is sanitation regularly practiced for those diseases which are spread by infected tissue left in the vineyard (bunch rot, phomopsis, crown gall)? **[4 pts]**
6. Are cultural practices that deter the spread of disease regularly used (for example: late pruning for *Eutypa*, avoidance of trunk injury for crown gall, leaf removal for *Botrytis cinerea*)? **[4 pts]**
7. Are a weather station, weather data logger, max-min thermometers, or rain gauges in your vineyard, and are they used as tools to modify cultural practices? **[4 pts]**

C. Weed Monitoring, Management, Control

Goal: To use sustainable farming methods that minimize weed growth which competes with vines or harbors diseases or insects. If wine quality is maintained by a vineyard floor management program where chemical weed control methods are minimized, take full points for Section C. **[44 pts]**

1. Are you familiar with weed species that grow in your vineyards? **[7 pts]**
2. Are mechanical methods of in-row weed control used? (Weed Badger, French plow, Bezzerredi, Clemens weeder) **[5 pts]**
3. Do you manage natural vegetation in the vineyard middles as a cover crop? **[4 pts]**
4. Do you manage your cover crop for weed suppression? **[4 pts]**
5. Are most problematic weeds treated when they are most susceptible to the herbicide? (example: field bindweed at flowering with glyphosate) **[4 pts]**
6. Is a systemic, contact herbicide material used as a spot treatment instead of spraying the entire berm or the strip in the vine row? **[5 pts]**
7. Where soil leaching is a problem, have you discontinued the use of triazines or other problematic herbicides that may leach into the groundwater (*i.e.* Simazine)? **[6 pts]**
8. When herbicides are used, is the application rate adjusted to your weed pressure? **[5 pts]**
9. When herbicides are used, do you consider soil type when determining application rate? **[4 pts]**

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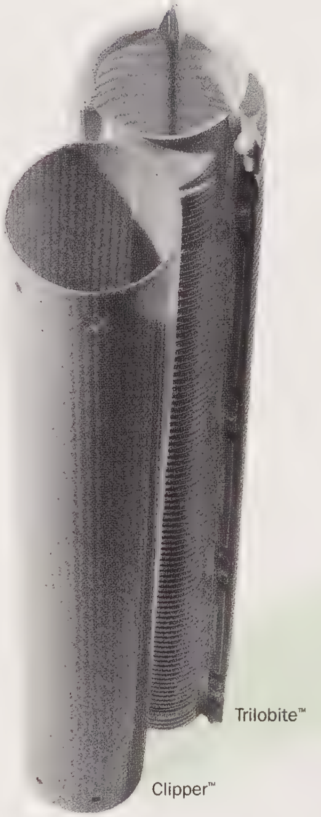

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D. Beneficials Recognition, Monitoring, Releases, Habitat

Goal: To keep aware of the latest information on biological controls for grape pests and to be able to recognize the beneficial insect species in your own vineyard. If wine quality is maintained by conservation or release of beneficial insect species for pest management, take full points for Section D. **[29 pts]**

1. Are you familiar with beneficial insects that naturally occur in your growing region? **[7 pts]**

2. Do you monitor populations of beneficial insects or the degree of parasitism on pests in your vineyard? **[7 pts]**

3. Are year-round habitat or refuge provided to encourage presence of beneficial insects (French prune trees for *Anagrus epos;* cover crop for spiders)? **[5 pts]**

4. Are beneficial insects released in your vineyard as an alternative to needed pesticide treatments? **[5 pts]**

5. Are owl or raptor refuges provided for bio-control of rodents? **[5 pts]**

E. Other

1. Have you sealed or do you regularly water your vineyard roads for dust abatement? **[4 pts]**

2. Are exclusion methods used for vertebrate pest control (deer fence, wire mesh cylinders, or grow tubes around new vines; bird netting)? **[4 pts]**

3. Is the sprayer routinely calibrated and are worn nozzles and screens replaced in order to insure the best coverage and efficacy of agricultural chemical applications? **[4 pts]**

4. When making a spray application, is the tractor driven at the proper speed to optimize coverage? **[4 pts]**

5. Are pesticides with different modes of action alternated within the seasonal spray program in order to minimize the risk of the pest resistance problems? **[4 pts]**

6. **Do management practices, pest monitoring programs, and IPM practices allow you to avoid the use of Category 1 or Restricted Materials?** (See Appendix for list of Category I and Restricted materials.) If so, take 25 points. **[25 pts]**

Pest Management Points: (Possible 200) Score________

II. SOIL MANAGEMENT

OBJECTIVE: Good stewardship of the land and soil is a prerequisite to good farming. Soil structure and nutrient content affect vine health and vigor. A healthy vine can often tolerate more pest damage or better compete with weeds than a less healthy one. The objective is to conserve or improve naturally occurring beneficial soil characteristics and use the best management practices to correct any deficiencies in soil tilth, water, or nutrient status.

A. Soil Monitoring, Plant Analysis

Goal: To conserve and maintain naturally occurring chemistry and fertility of the soil, which promotes vine growth, and to

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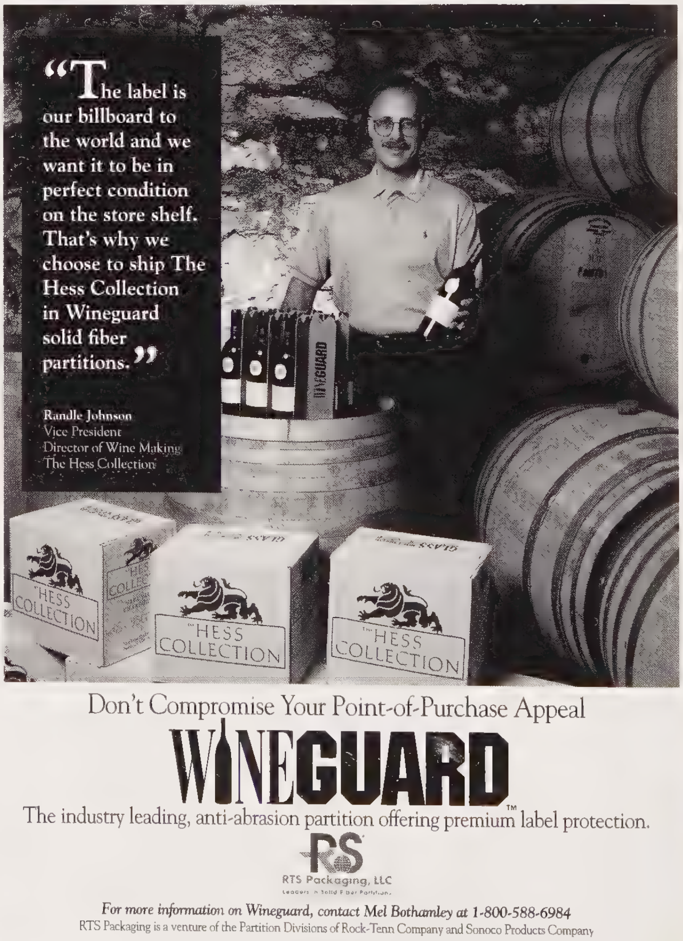
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detect potential imbalances (e.g., toxicities, deficiencies) that may deter vine growth. If you have begun or are maintaining a soil and plant monitoring program that includes all components, take full points for Section A. **[36 pts]**

1. Is the soil periodically sampled and tested for nutrient content (NO_3^-, NH_4^+, P, K^+, Ca^{+2}, Mg^{+2}, organic matter content)? **[8 pts]**

2. Do you routinely monitor the soil's pH, EC (electrical conductivity), and toxicities (Na+, Cl-, B)? **[7 pts]**

3. Do you have an annual program of bloomtime petiole collection for plant nutrient analysis? **[7 pts]**

4. If the vines have nutritional problems, have you correlated soil tests to leaf petiole tests? **[7 pts]**

5. Do you have aerial photographs of your vineyard site (either infra-red or standard film) and use them in vineyard management decisions? **[7 pts]**

B. Pre-Planting Soil Structure Modification

Goal: To correct soil-related impediments to vine health and growth prior to planting. If soil-related problems were detected and corrected before planting, take full points for Section B. **[25 pts]**

1. Before planting, did you have the soil tested for pH, salinity, cation exchange capacity (CEC), and soil-borne pests? **[5 pts]**

2. If the soil was alkaline or saline, was gypsum $CaSO_4$ applied, or, if the soil was acidic, was limestone $Ca(CO_3)_2$ applied to help neutralize the acidity? **[4 pts]**

3. Were backhoe pits dug prior to planting to analyze the soil profile and to determine possible physical impediments to root growth? **[4 pts]**

4. If the soil harbored vine pests, was it planted to a non-host crop or allowed to lay fallow to reduce the pest population before vineyard planting? **[4 pts]**

5. If there were physical impediments to root growth or water permeability problems in a block, did you deep-rip, slip plow, or install a tile drainage system to correct? **[4 pts]**

6. If necessary, was organic matter incorporated into the soil prior to planting? **[4 pts]**

C. Post-Planting Soil Structure Modification

Goal: To correct soil-related impediments to vine health and growth and to reduce farming practices that contribute to deterioration of soil structure. If you have a program to promote and maintain good soil structure in your vineyard, take full points for Section C. **[22 pts]**

1. Is a permanent cover crop maintained in your vineyard? **[4 pts]**

2. Do your soil management practices promote good tilth and a friable soil? **[5 pts]**

3. Are backhoe pits dug periodically in order to monitor vine root growth and/or soil structure? **[5 pts]**

4. Do you follow up on results of the backhoe-pit analysis and take corrective measures if needed? **[4 pts]**

5. Do you use tractors and vineyard equipment that mini-

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mize soil compaction, such as high floatation tires or track-layers? **[4 pts]**

D. Erosion Control

Goal: To conserve soil stability and eliminate erosion and offsite movement of sediments. If you have eliminated erosion, take full points for Section D. **[34 pts]**

1. Do you know your soil series, or have you consulted with the local USDA Natural Resource Conservation Service office to determine your soil series and its respective erosion hazard? **[7 pts]**
2. Do you know the permeability and runoff rates of your soil(s) and do you irrigate accordingly? **[6 pts]**
3. Is a winter cover crop maintained specifically for erosion control? **[6 pts]**
4. If your vineyard is on a steep slope, do you cultivate or work the soil across the slope? **[5 pts]**
5. If you have a hillside vineyard, do you have water diversions on the longer slopes to transport the runoff safely? **[5 pts]**
6. Have you developed a cultivation plan that minimizes the number of tractor passes per season? **[5 pts]**

E. Cover Crop

Goal: To preserve or improve soil structure and soil nutrient content, conserve soil stability and eliminate erosion, reduce dust-related programs, and provide habitat for beneficial insects with effective use of a cover crop. If you plant and maintain cover crops, take full points for Section E. **[28 pts]**

1. Is a cover crop encouraged or planted in vine row middles? **[6 pts]**
2. If your vineyard has a nitrogen requirement, is your cover crop a nitrogen-fixer (clovers, vetches, legumes, etc.)? If your vineyard has no nitrogen requirement, take the 5 points. **[5 pts]**
3. Is your cover crop an effective habitat for beneficial insects? **[6 pts]**
4. Have you reduced mite pressure where cover crop is maintained that effectively keeps the dust level down? **[6 pts]**
5. If you need to reduce vine vigor, do you manage a cover crop to do so? **[5 pts]**

F. Amendments

Goal: To promote and maintain high levels of biodiversity in soil microbiology or correct deficiencies which may affect soil chemistry, water holding capacity, or nutrient holding capacity. If you have improved soil organic matter levels and maintained a balanced soil chemical status, take full points for Section F. **[27 pts]**

1. Is any organic matter added to the soil, such as compost, manure, pomace, municipal green waste? **[9 pts]**
2. Is green manure from the cover crop incorporated into the soil? **[6 pts]**
3. If the soil is alkaline or saline, is gypsum ($CaSO_4$) applied? **[6 pts]**
4. If the soil is acidic, do you apply limestone ($Ca(CO_3)_2$) to help neutralize the acidity? **[6 pts]**

G. Composting

Goal: To divert agricultural organic or municipal green wastes into vineyard soil in order to benefit soil tilth and health. If compost is produced for your vineyard, take full points for Section G. **[28 pts]**

1. Is winery pomace included in vineyard composting program? **[7 pts]**
2. Is green waste diverted from the waste stream to your composting program (*i.e.* municipal green waste or other crop or food processing residues)? **[7 pts]**
3. Do you effectively manage your fresh organics into compost by using effective composting techniques, such as application of moisture, turning, and temperature monitoring? **[7 pts]**
4. Do you support commercial compost programs by purchasing compost? **[7 pts]**

Soil Management Points: (Possible 200) Score________

III. WATER MANAGEMENT

OBJECTIVE: Good water management results in healthy vines, enhances resistance to pests, improves weed control, promotes uniform maturation of the crop, and is a responsible use of a natural resource. An effective program in monitoring water quality and distribution uniformity can lead to the conservation of water resources and quality while meeting vine water needs. A well-designed and maintained on-farm water management system prevents off-site water movement and non-point source pollution of surface and ground waters.

A. Monitoring Water Quality

Goal: To monitor water quality, water resources available for irrigation, and energy efficiencies of the water application system. If you keep records of water quality and well and pump performance tests, take full points for Section A. **[28 pts]**

1. Do you periodically have the water tested for pH, electrical conductivity (EC), sodium adsorption ratio (SAR), nitrates (NO_3^-), sodium (Na^+), chlorides (Cl-), and boron (B) levels? **[14 pts]**
2. Do you periodically have well(s) tested for pump energy efficiency and monitored for changes in water yield (gallons per minute) and draw-down? **[14 pts]**

B. Offsite Water Movement

Goal: To prevent off-site movement of rain, irrigation water, and sediments, and to eliminate non-point source pollution of surface waters. If you have eliminated off-site movement of water, take full points for Section B. **[28 pts]**

1. Do your irrigation practices minimize run-off? **[6 pts]**
2. Are prevention techniques in place for containment of any irrigation or rainfall run-off? **[5 pts]**
3. Are devices in place to divert water away from public roads (sprinkler guards, flow channels)? **[5 pts]**
4. Is a subsurface drainage system in place if needed? **[6 pts]**
5. If there is a soil permeability problem, have amendments been used to improve water infiltration? **[6 pts]**

C. Irrigation System Efficiency and Maintenance

Goal: To use available water resources in the most efficient and uniform manner possible. If your irrigation

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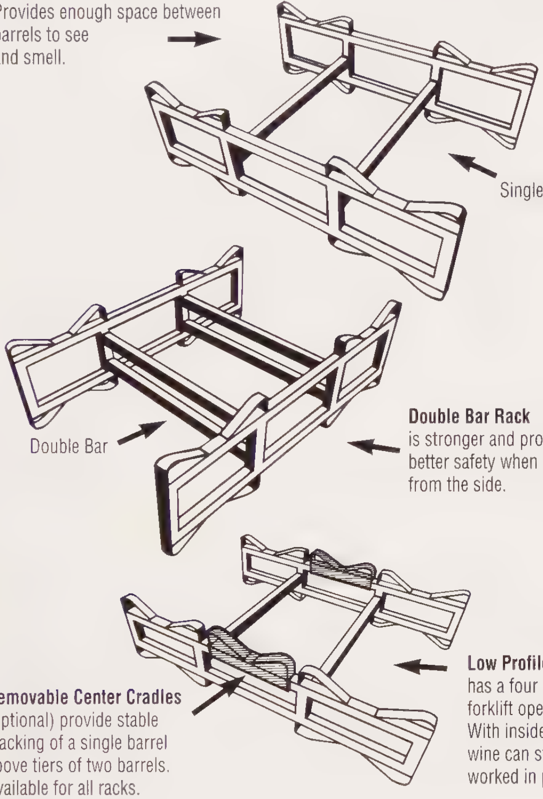

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system is operating at peak efficiency, take full points for Section C. **[56 pts]**

1. Is a low-volume system installed (e.g. drip) for irrigation? **[8 pts]**

2. Is a low-volume system (e.g. pulsators) used for frost control? If no frost control system is required, take 8 pts. **[8 pts]**

3. Do you routinely test the irrigation system for distribution uniformity and application efficiency by monitoring emitter outflows and pressure differences across a block? **[8 pts]**

4. If drip irrigation is used, is the irrigation efficiency (beneficial use as compared to amount of water applied) at 90% or better? **[7 pts]**

5. Are water filters regularly inspected and cleaned? **[7 pts]**

6. Are irrigation lines regularly flushed out? **[5 pts]**

7. If required, is chemical maintenance of your irrigation system performed to prevent plugging? **[5 pts]**

8. Are there flow meters on the wells or other pumps to monitor water usage over the season? **[8 pts]**

D. Irrigation Scheduling and Amount

Goal: To achieve the most beneficial use of applied irrigation water while conserving water resources and eliminating non-point source pollution of groundwater. If you use and record the water budget method in your vineyard, take full points for Section D. **[64 pts]**

1. Do you know the effective rooting depth of your soils? **[8 pts]**

2. Do you know the amount of water available in the soil profile at budbreak? **[8 pts]**

3. Do you record seasonal rainfall? **[7 pts]**

4. Are monitoring devices used (gypsum blocks, neutron probes, tensiometers) to track soil moisture depletion? **[8 pts]**

5. Are Evapo-Transpiration (ET) calculations used as one of the tools to determine irrigation requirements and is an ET budget followed for the season? (ET data available through CIMIS, California Irrigation Management Information System, 1-800-92CIMIS, or 1-800-922-4647). **[8 pts]**

6. If your soil builds up salts, do you know the leaching requirements? (If you have no salinity problems, take the 8 points.) **[8 pts]**

7. Is water conservation practiced, *i.e.*, irrigating at night when the ET demand is at its lowest? **[7 pts]**

8. Where previous local experience has indicated improved wine quality may result, have you experimented with deficit irrigation timings? **[10 pts]**

E. Fertilization / Fertigation

Goal: To apply required fertilizers in the most efficient manner and eliminate non-point source pollution of groundwaters. If you have optimal fertilizer use efficiency through the use of fertigation, take full points for Section E. **[24 pts]**

1. Are leaf petiole analysis results used as a guide and vine vigor and fruit quality considered when making fertilizer application decisions? **[6 pts]**

2. Is water quality analysis considered prior to choosing fertilizer materials in order to prevent plugging of the irrigation system? **[6 pts]**

3. If fertilization is needed, do you fertilize by injection into

the irrigation system (fertigate)? [6 pts]

4. If you fertigate, are back-flow prevention devices in place to protect against contamination of water sources? [6 pts]

Water Management Points: (Possible 200) Score________

IV. VITICULTURAL MANAGEMENT

OBJECTIVE: Decisions made prior to vineyard establishment may result in production practices which are environmentally safe and sustainable. Many vineyard insect and disease problems can be reduced or avoided by making informed choices prior to planting.

A. Spacing, Orientation, Density

Goal: To establish a vineyard which uses natural conditions to promote a healthy microclimate within the canopy and conservation of soil and water resources within a block. If you have matched the vineyard design to the site conditions, take full points for Section A. [50 pts]

1. Did you consider disease management when choosing row orientation? [12 pts]
2. Is the spacing matched to the potential vine vigor? [12 pts]
3. Did you consider erosion hazard when choosing row orientation? [12 pts]
4. Was wine quality a consideration in the orientation/ spacing decision? [14 pts]

B. Rootstock, Scion, Clonal Selection

Goal: To select a rootstock and scion that will eliminate the need for chemical or cultural intervention to correct a problem with vine vigor, a pest problem, or an environmental condition that would impact either vine health or wine quality. If you have matched the vineyard site to rootstock/scion combinations, take full points for Section B. [50 pts]

1. Are disease and/or pest-resistant rootstocks planted in the vineyard? [8 pts]
2. Are certified plant materials used? [7 pts]
3. Were soil characteristics considered when rootstock(s) were chosen? [7 pts]
4. Is the scion matched to your growing region? [6 pts]
5. Do you have a rootstock trial on your site, or have you used information obtained from a similar site (other grower or UC trials) when making rootstock choices? [6 pts]
6. Do you have a clonal selection trial on your site, or have you used clonal information obtained from a similar site when making scion choices? [6 pts]
7. If you have trials on your vineyard, is the fruit from the trials harvested and vinified separately for later evaluation? [10 pts]

C. Trellising

Goal: To use the optimum trellis design to balance vine capacity and wine quality. If you have matched the trellis system to local conditions and rootstock/scion vigor, take full points for Section C. [50 pts]

1. Is a trellis system used that accommodates the vine vigor? [10 pts]

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2. Is a trellis system used that promotes good canopy microclimate, *i.e.*, improved sunlight exposure and/or air movement? **[10 pts]**

3. Have you modified or retrofitted an existing trellis system in order to improve canopy microclimate and improve wine quality? **[10 pts]**

4. Do you have a trellis trial plot, or did you use data from local trials to determine which trellis system is best suited to your site for wine quality improvement? **[20 pts]**

D. Canopy Management

Goal: To monitor canopy microclimate to insure sound and quality fruit. To take corrective actions to improve canopy microclimate when existing conditions may adversely affect vine health or wine quality. If you have improved the wine quality of your fruit through effective canopy management techniques, take full points for Section D. **[50 pts]**

1. Is canopy microclimate monitored (light meters, atmometers, leaf-wetness/relative humidity/temperature sensors)? **[8 pts]**

2. Is the fruit-to-pruning weight ratio between the range of 5 to 10? **[8 pts]**

3. Do you rate or score the canopy pre-harvest (evaluate sunlight exposure, count number of leaves/clusters, R. Smart vineyard scoring system, point-quadrant)? **[10 pts]**

4. Is shoot density managed to promote fruit separation (*i.e.*, shoot thinning, shoot positioning, sterile shoot removal where needed)? **[8 pts]**

5. Where needed, are leaves removed from the fruit zone to reduce disease or pests or improve wine quality? **[10 pts]**

6. Is pruning adjusted to keep each vine in balance (fruit/foliage)? **[6 pts]**

Viticultural Management Points: (Possible 200) Score________

V. WINE QUALITY

OBJECTIVE: The very best wine quality attainable is the ultimate achievement. Harvest is the culmination of an entire year of work in the vineyard, and the condition of fruit upon arrival at the winery is a critical part of the process.

A. Meet Contract Parameters

Goal: To provide winery with grapes in best possible condition. If fruit meets or surpasses the winery's expectations, take full points for Section A. **[50 pts]**

When your fruit is delivered to the winery:

1. Is the grape °Brix within specified contract optimum range? **[8 pts]**

2. Is the juice pH within specified contract optimum? **[8 pts]**

3. Is the Material Other than Grapes (MOG) content below specified contract amount? **[8 pts]**

4. Is the percentage of rot or mildew in the fruit below

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specified contract amount? [7 pts]

5. Do you know what block(s) each load of fruit was picked from? [10 pts]

6. Before harvest, do you provide the winery with a reasonably accurate crop projection? [8 pts]

B. Taste "Your Wine"

Goal: To understand that wine quality begins in the vineyard. The grower and winemaker work together to produce a particular wine style. If you and the winemaker work as a team in producing the best wines possible from your vineyard, take full points for Section B. [50 pts]

1. Do you taste and evaluate the wines from your vineyard? [10 pts]

2. After step B-1 above, are you able to determine which of your viticultural practices contributed positively to wine quality? [10 pts]

3. If wine quality needs to be improved, are you attempting to determine which viticultural practices can be altered in order to improve wine quality? [20 pts]

4. Do you regularly confer with the winemaker or winery representative and have him/her in your vineyard to discuss all of the above? [10 pts]

Wine Quality Points: (Possible 100) **Score________**

VI. CONTINUING EDUCATION/WORKER SAFETY

OBJECTIVE: To learn and to stay aware of the latest developments in one's field is crucial to career and personal growth. One must constantly strive to keep informed and remain current. Techniques in grapegrowing are changing and improving; therefore, the grapegrower and winemaker must also change and improve.

A. Grower

Goal: To remain abreast of the latest developments by reading journals, listening to peers, and participating in meetings. If you are fluent with the latest in grapegrowing and pest management techniques, take full points for Section A. [33 pts]

1. Do you regularly attend UCCE, CAWG, ASEV, and other industry meetings, seminars and symposiums to keep up to date on grapegrowing and winemaking issues? [7 pts]

2. Do you subscribe to and read farming, trade, and industry journals (*i.e., American Journal of Enology & Viticulture, Practical Winery & Vineyard, American Vineyard*)? [7 pts]

3. Do you have current membership in local growers' and vintners' associations and attend meetings to keep informed on local issues? [7 pts]

4. Do you own and use a copy of *Grape Pest Management*, 2nd Edition, UC DANR Publication #3343? [12 pts]

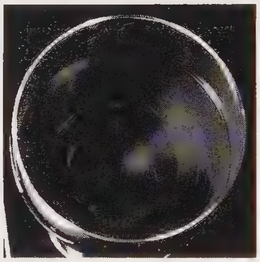
B. Employees

Goal: To promote the vineyard as a safe and desirable place

Our Mission...
To Respect Wine

Selection

Evolution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to work. The grower must be concerned about the health, safety, and continuing education of employees. The employee is an integral part of the team that successfully works together to produce quality wine grapes and quality wines. If you are in full compliance and have incentive programs in place that promote education and reward employee safety, take full points for Section B. **[35 pts]**

1. Do you have **full compliance** with all Department of Pesticide Regulation (DPR), Worker Protection Standard (WPS), SB 198, and Cal-EPA laws and regulations? **[5 pts]**

2. Do you routinely conduct employee safety and training meetings; stressing topics such as the importance of personal hygiene and daily change of clean clothing, safe use and handling of pesticides, and pesticide use notification? **[5 pts]**

3. Are your employees encouraged to be team members to contribute to and share the responsibilities of producing quality wine grapes? **[5 pts]**

4. California law requires education of employees regarding mandatory re-entry intervals (REIs) stated on the pesticide label. If you **did not** have to take disciplinary action against either employees or supervisors for violations of any re-entry intervals, take 5 points. **[5 pts]**

5. Do you offer incentives or have an employee safety "rewards" program in place that recognizes and appreciates individuals for safe job performance? **[5 pts]**

6. Are your employees each trained to be pest/disease scouts to help with monitoring in the vineyard? **[5 pts]**

7. Do you regularly hold informal employee meetings to discuss your growing philosophies and long- and short-term work goals? **[5 pts]**

C. Winemaker (Customer)

Goal: Public perception of grapegrowing is an important part of marketing wine. Promotion of the positive aspects of winegrape growing is essential. If you are working to improve the image of grapegrowers and their craft, take full points for Section C. **[32 pts]**

1. Do you provide full pesticide use reporting to the winery on a monthly basis? **[11 pts]**

2. Are you involved with the growers' and vintners' associations that strive to educate the public about IPM and sustainable agricultural practices in the vineyard? **[11 pts]**

3. Are you part of an aggressive marketing program that educates and promotes the positive image of the Central Coast Vineyard Team and its Positive Points System Protocol, especially in winery tasting rooms? **[10 pts]**

Continuing Education Points: (Possible 100) Score________

Members of the Central Coast Winegrape Growers Vineyard Team are: Don Ackerman, Meridian Vineyards, Paso Robles; Larry Bettiga, U.C. Coop Extension, Salinas; Mary Bianchi, U.C. Coop Extension, San Luis Obispo; Jenny Broome, UC SAREP, Davis; Steve Carter, J.Lohr Winery, Paso Robles; Richard Hoenish, UC Davis; Ed Holt, Flood Vineyards, Santa Maria; Derryal John, Derryal John Management, Shandon; Robert LaVine, Robert Mondavi Winery, San Luis Obispo; David Lucas, The Lucas Winery, Lodi; Dana Merrill, Coastal Valley Management, King City; Kelly McFarland, I.V.V. Carmel, Gonzales; Steve McIntyre, Monterey Pacific, Soledad; Jeff Newton, Coastal Vineyard Care, Santa Ynez; Merilark Padgett-Johnson, consultant, Santa Maria; Neil Roberts, Robert Mondavi Winery, San Luis Obispo; Craig Rous, Robert Mondavi Winery, Woodbridge; Richard Smith, R.S. Properties, Soledad; Bob Thomas, Mesa Vineyard Management, Santa Maria.

Appendix

EPA Category I materials (signal words **Poison / Danger**) and Restricted materials currently registered for use on wine grapes:

• Insecticides	
Azinphos-methyl	(Guthion)
Carbaryl	(Sevin)
Endosulfan	(Thiodan)
Fenbutatin-oxide	(Vendex)
Methyl parathion	
Methomyl	(Lannate)
• Soil-applied	
1,3-Dichloropropene	(Telone II)
Carbofuran	(Furadan)
Fenamiphos	(Nemacur)
Metam sodium	(Vapam)
Methyl bromide	(Brom-o-gas)
Chloropicrin	
• Herbicides	
Paraquat	(Gramoxone)
• Baits	
4-Amino Pyridine	(Avitrol)
Aluminum phosphide	(Phostoxin)
Strychnine	

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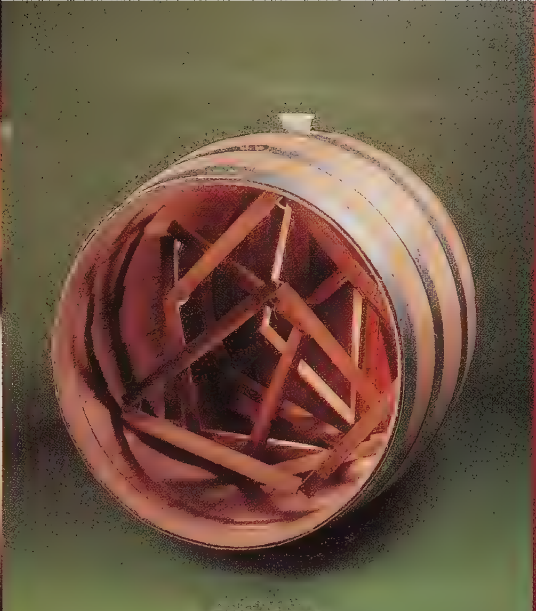

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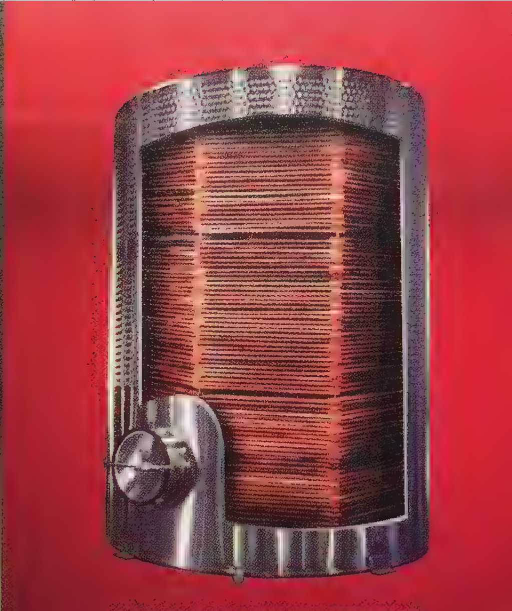

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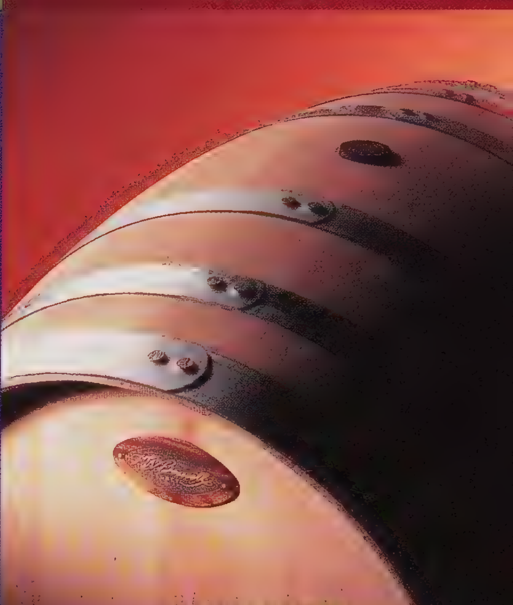

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What YOU should know about WINE and GOOD HEALTH

by R. Curtis Ellison, MD
Professor of Medicine & Public Health
Chief, Section of Preventive Medicine
& Epidemiology, Boston University
School of Medicine, Boston, MA

Americans are rather strange animals in terms of what they eat and drink. For example, they rush to foods that are shown in one research study to be "good" for them, but then turn away from them as soon as any scientist does another study that shows that the food or beverage isn't that good for them after all. When we look at the American public's response to health messages and guidelines, there have been some real snafus in the past few years.

We all remember the frenzied response to oat bran. Scientists finally had to explain to the American public that while cereals are good for us, there is nothing magic about oat bran, and we do not get much benefit from sprinkling it over our filet mignon.

The American Heart Association hounded us for 30 years, and finally got Americans off butter, trying to get us to decrease saturated fats and switch instead to high-polyunsaturated margarines. Then, an epidemiologist from Harvard University announced that many of the margarines are loaded with trans fatty acids, which are worse than saturated fats.

But what about wine?

For decades, the message to the American public about anything with alcohol in it was simple: Just say "no!" Then, in 1991, Morley Safer told 35 million Americans on the *60 Minutes* television program that wine is good for us — it is the secret ingredient that protects the French from heart disease — and Americans started drinking more wine! In early 1993, the Oldways group in Boston gave us a new food pyramid, one that includes — of all things! — WINE! Are these more messages the American public needs to back away from?

What has happened since *60 Minutes* in 1991 and the first Mediterranean Diet conference in 1993? Is wine still good for you? The answer is yes.

Wine and cardiovascular diseases

Since 1991, there have been a very large number of epidemiologic studies reported on coronary heart disease, stroke, and other cardiovascular (CV) diseases, which remain as the leading causes of death throughout the developed world. The studies have been remarkably consistent: Individuals who consume alcohol moderately have fewer heart attacks.

Among scientists, there is really no question; everyone agrees that alcoholic beverages, in general, reduce the risk of heart disease. We now know many of the reasons why alcohol reduces the risk of coronary heart disease, because we have identified many of the biological, physiological effects of alcohol.

Alcohol in any form affects the blood lipids. Alcohol increases HDL-cholesterol, the so-called "good cholesterol" which lowers the risk of heart disease. Alcohol also tends to slightly decrease the LDL-cholesterol, the "bad cholesterol," which increases the risk of coronary heart disease.

Alcohol, red wine in particular, also favorably affects blood coagulation within the arteries. For example, it decreases platelet aggregation, and it also has favorable effects on fibrinogen and fibrinolysis, factors related to blood clotting and the removal of clots within the arteries.

The effects of alcohol on blood clotting may be just as important as the effects on the HDL-cholesterol. But they are short-term effects. They last only for a day or so. For example, after consuming alcohol, the platelets are less sticky only for 24 to 48 hours, then they go back to their usual state or may even overshoot and become abnormally sticky and more likely to cause a blood clot.

This would suggest that you should consume alcohol on a regular basis, perhaps daily. Unfortunately, most Americans do not have good drinking patterns; they tend to drink nothing all week and then drink heavily — binge-drink — on the weekends, which is a very unhealthy way to consume alcohol.

Many in Europe still have wine with their meals every day. So their platelets and other factors related to clotting never show the rebound effect that may relate to increased risk of heart disease. Thus, the pattern of drinking, and not just the amount, may be particularly important.

The short-term beneficial effects were well-demonstrated in results reported from New Zealand by Rodney Jackson and colleagues. These investigators compared the risk of a myocardial infarction, or heart attack, and cardiac death among regular drinkers according to whether or not they had consumed any alcohol within the preceding 24 hours. These investigators found that if a regular drinker had one or more drinks within the preceding 24 hours, his or her risk of heart attack was reduced (to about 75% for men and to 61% for women) when compared with drinkers who had not had anything to drink in the preceding 24 hours. The risk of dying from a heart attack was reduced even further for drinkers who had something to drink in the preceding 24 hours. The bottom line: Never go more than 24 hours without a drink!

There are a number of other mechanisms by which alcohol also favorably affects coronary heart disease (CHD) risk. They include beneficial effects on glucose and insulin levels, which may reduce the risk of diabetes. In addition, part of the protection post-menopausal women get from moderate drinking may relate to an increase in estrogen levels. Estrogen provides strong protection against CHD.

Now we have always said that wine should be part of a healthy lifestyle, not the ***only*** healthy thing you do. Earlier this year, a group from Harvard University reported from their national study of nurses that alcohol works best when a person also takes in plenty of vitamins, for example. Whatever your intake of folate, going from being a non-drinker to taking in any amount of alcohol reduces your risk of CHD. Further, regardless of your drinking status, taking in more folate reduces your risk of heart disease. But taking in lots of folate plus moderate drinking leads to dramatically lower risk of CHD. Women who drink one to two glasses of wine and get more than about 500 micrograms of folate each day have a risk of CHD only 22% of that of the low-folate, non-drinking women.

Is it the wine or simply alcohol?

Is wine, particularly red wine, better than spirits or beer in terms of preventing heart disease? We all know that red wine contains a large number of substances in addition to alcohol — tannins, phenols, resveratrol, quercetin, epicatechins, and so on — that are powerful antioxidants, tend to reduce blood clotting, and have other effects that reduce heart disease risk. Most of these substances are not present in spirits or beer. A number of epidemiologic studies have shown that wine drinkers do better than beer and spirits drinkers in terms of disease outcomes, as well.

A large study in the San Francisco Kaiser-Permanente group by Dr. Arthur Klatsky and his associates has reported less heart disease among wine drinkers than among drinkers of other beverages; similar results have been reported in recent studies in Copenhagen and Scotland.

But in the U.S., wine drinkers are different in many other ways from beer or spirits drinkers. For example, wine drinkers tend to be better educated, have higher incomes, smoke less, and exercise more than beer drinkers. So it is difficult for an epidemiologist to be sure that wine drinkers are healthier because they drink wine, or whether it is just that people who have healthier lifestyles drink wine.

Luckily, we have a number of studies from the animal laboratory that support an added protection for wine. Here, we do not have "wine drinkers" or "beer drinkers" being compared, but rabbits. Compared to rabbits that were given only water in one study, those given wine to drink had a reduction in the degree of atherosclerosis (to only 40% and 67% as much as the animals given water). The reduction was greater among rabbits given wine than among those that were given other alcoholic beverages.

Health benefits against other diseases

We now have definitive evidence that wine and alcohol are protective against CHD. What about other diseases?

Evidence is strong that wine offers protection against stroke, as well. Further, one large study in France demonstrated lower risk of Alzheimer's Disease — a number of studies show that older people who consume a little alcohol are a little brighter; they do better on IQ tests. So, while heavy drinking may kill off those brain cells, moderate

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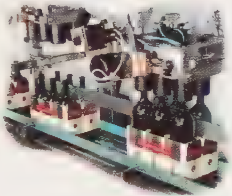

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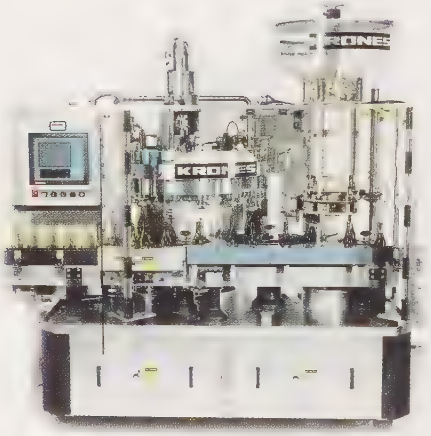

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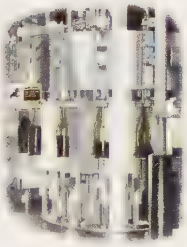

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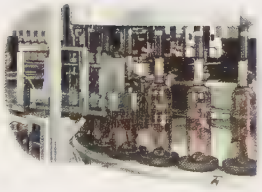

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drinking seems to preserve them.

Two large studies have shown that moderate drinkers have reduced risk of developing diabetes. In addition, there is increasing evidence that the combination of alcohol and the other substances in wine may be particularly helpful in preventing gastrointestinal diseases, and as reported in January, wine (but not other alcoholic beverages) may reduce the risk of macular degeneration, the leading cause of blindness in older adults.

What about cancer?

There are a number of "alcohol-related cancers," such as cancer of the mouth, pharynx, esophagus, and liver. These are diseases of alcoholics, not of moderate drinkers. The only condition that may relate to moderate drinking is breast cancer in women.

In the Framingham Study at Boston University, where we have followed more than 5,000 women for 25 to 50 years, our results do not show any increased breast cancer among those who drink and those who abstain. However, other studies suggest that for every drink per day, a woman may have about a 10% increase in breast cancer. Thus, if a woman was drinking two or three drinks per day, her risk of breast cancer might be increased by about 30%, which is the increase in breast cancer risk that is usually quoted for women taking post-menopausal hormone treatment.

To put this breast cancer risk into perspective, for the average post-menopausal woman, the risk that she will develop breast cancer in the next 10 years is a little less than 4%. If she did something that might increase her risk by 30% — such as taking post-menopausal hormones or drinking two or three glasses of alcohol each day — that risk might increase to about 5%. If she averaged only one drink per day, recommended as a safe level for women by the U.S. Dietary Guidelines, her increase would be to about 4.4%, rather than 4%.

While women get heart disease predominantly when they are older, usually after age 60 or 70, which is somewhat later than men, we must remember that in the U.S., more women than men die from cardiovascular (CV) diseases. Overall, CV diseases kill almost a million Americans every year! A woman is five to ten

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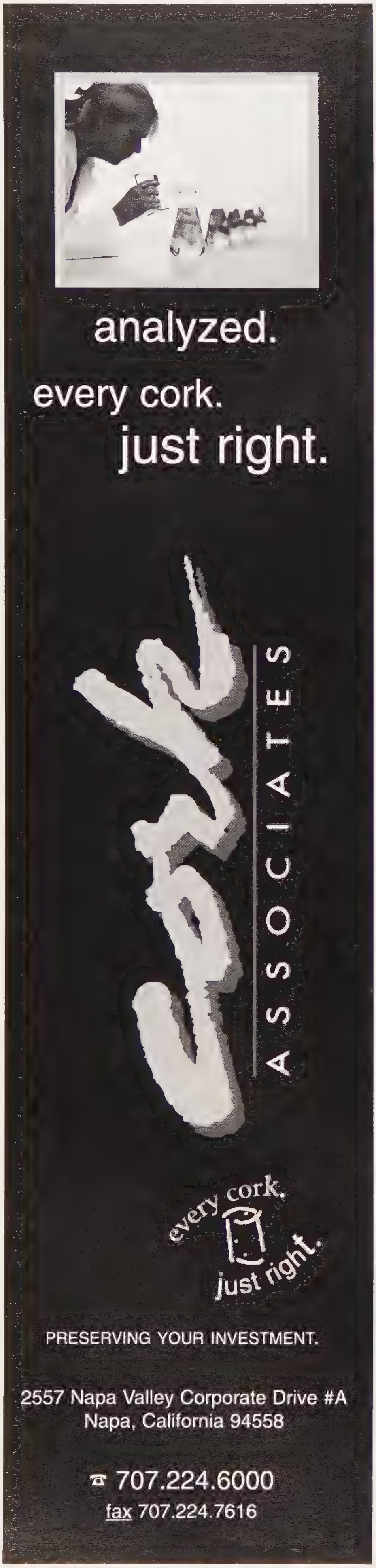

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times more likely to die of heart disease or stroke than she is from breast cancer.

I certainly would not advise all young women, or those at high risk of breast cancer, to start drinking. On the other hand, I do not believe that an increase in risk from, say 4% to 5% should be exaggerated, frightening women with "scare tactics" as some groups have been doing. If a young woman is considering starting to drink on a regular basis, she should discuss this with her physician and make such a decision based on sound scientific data.

Does wine differ from other alcoholic beverages in terms of cancer risk? We have data from basic science studies suggesting that the phenolic compounds in wine may actually reduce the risk of cancer. Do we have any evidence in epidemiologic studies suggesting differences? Data at present are very limited, but several recent studies show differences among various beverages; usually, the greatest increase in cancer risk is for beer-drinkers. However, more definitive data are needed before we can determine if wine is safer than other beverages in this regard.

Moderate drinkers live longer

But if alcohol decreases the risk of some diseases, yet may increase the risk of others, what is the net effect? What is the bottom line? On average, do drinkers have longer or shorter lifespans, than non-drinkers?

We now know that, indeed, moderate drinkers live longer than abstainers. In essentially all epidemiologic studies on total mortality, the net effect of the consumption of one or two drinks per day is a lower death rate. In reviewing the results of alcohol consumption on total mortality from all prospective studies that reported such data between 1986 and 1993, I found a remarkably consistent pattern: In each study, moderate consumption of alcohol reduced the risk of total mortality. Individuals who consumed moderate amounts of alcohol tended to live longer than individuals who did not consume any alcohol or those who drank excessively.

Unlike the relation between alcohol and CHD, I think that this information is still relatively new. While almost all physicians admit strong protective effects of alcohol against CHD, some believe that if you encourage drinking you cause all kinds of other diseases, and there is no net health benefit. However, the data continue to show that there is a net health benefit: Moderate drinkers live longer.

This was brought to the attention of Americans just recently by a paper in the *New England Journal of Medicine* that reported on almost 500,000 men and women who participated in a study by the American Cancer Society. For both men and women, those consuming about one drink per day had total death rates 21% lower than non-drinkers.

From a public health point of view, we do not want to have policies that will reduce moderate drinking. If we did, we would increase health-care costs, not decrease them.

The implications of this were shown by Morten Gronbaek using data from the Copenhagen Heart Study. In that study, more that 13,000 individuals were followed over ten years, and deaths were studied in relation to the amount of alcohol the subjects had consumed. Investigators found that the lowest rates of death were among those in the study population who consumed one to six drinks per week, or up to about one drink per day.

They then applied the death rate from this group to other categories of alcohol consumption. They calculated the number of deaths in each of the other groups that would be expected if that group had the same death rate as the individuals who consumed one to six drinks per week. In this way, they estimated the number of deaths that could be "attributed to alcohol."

Whenever we talk about "deaths attributable to alcohol," we must take into account those related to abstinence from alcohol as well as those related to too much alcohol.

We often find statistics indicating that a certain proportion of deaths, or a certain amount of money, can be attributed to alcohol abuse. But since the lowest risk of death is not among abstainers but among light-to-moderate drinkers, you must also assume that some deaths must be attributed to not drinking. This is what Gronbaek and colleagues found to be the case.

There were a number of deaths among men that supposedly would not have occurred if all men in that group had consumed one to six drinks per week, the drinking category with the lowest risk of death. We will call these excess deaths.

Many of the excess deaths were among the abstainers: presumably, many in this group died from cardiovascular diseases that would have been prevented if they were light-to-moderate drinkers.

Among women, essentially all of the excess deaths were due to women not drinking. Again, it is postulated that many of these deaths were from cardiovascular disease and would not have occurred if the women were consuming small amounts of alcohol.

What is a doctor to do with these data?

Are we now at the point where doctors should start prescribing wine for their non-drinking patients or those who do not drink regularly?

We have recently carried out some theoretical research on what the effects would be among American adults between the ages of 45 and 75 if they changed from being non-drinkers to moderate drinkers. We calculated the effects on total mortality among these American men and women that we would expect if the men began to consume one to two drinks per day and the women one drink per day.

We assumed that, even with our best efforts to not prescribe alcohol to individuals who might abuse it, there would be a small percentage of individuals who would not follow doctor's orders and would begin to drink heavily. Thus, we assumed that 5% of these subjects would begin to abuse alcohol, increasing their risk of cirrhosis, drunk driving deaths, and certain cancers.

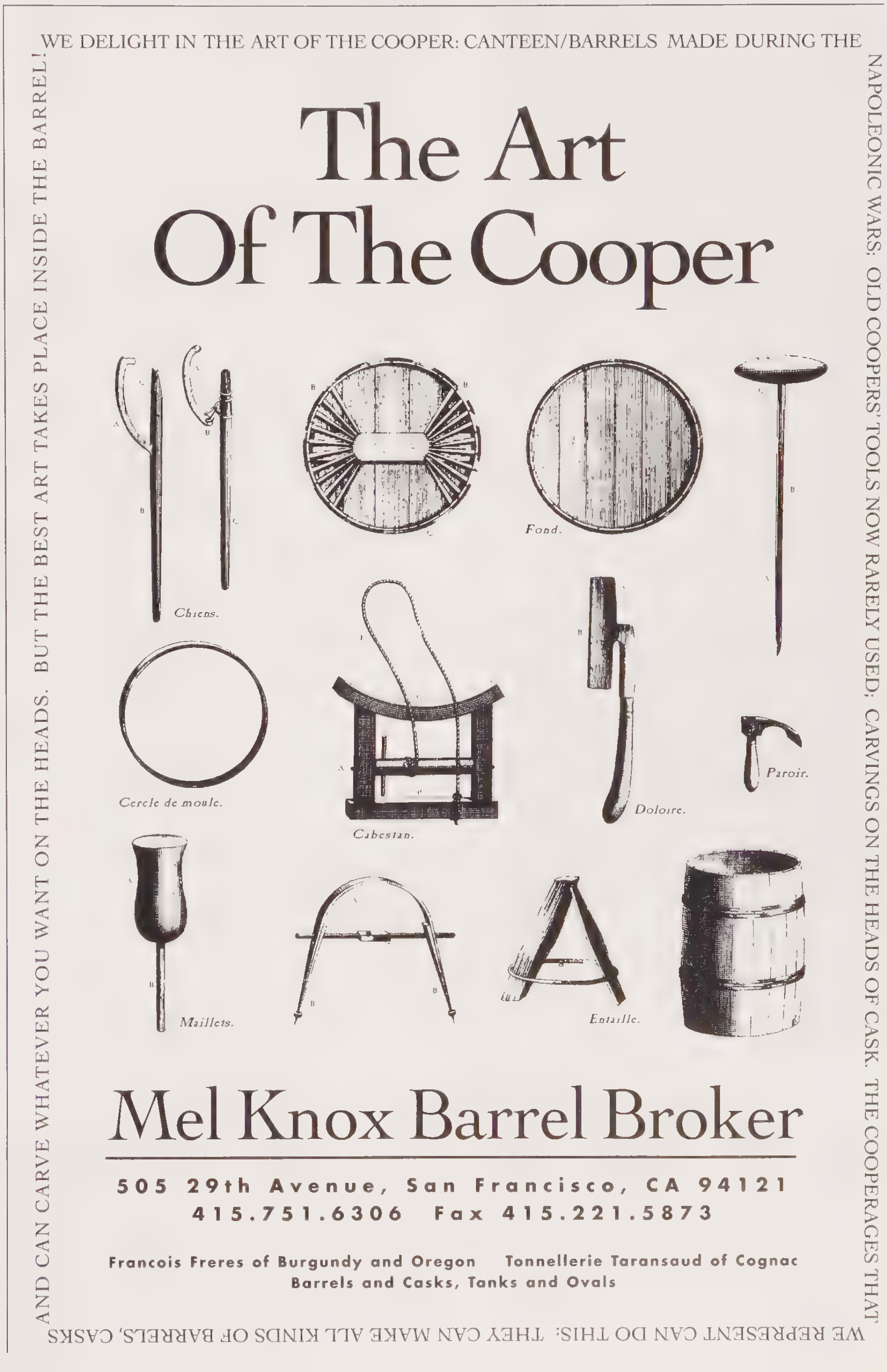
Our preliminary results suggest that many of the Americans who do not drink would benefit if they began to consume alcohol moderately. The net effect of starting to drink moderately depends on the age and risk factors for cardiovascular disease and breast cancer of an individual, but reductions in the 10-year risk of dying range up to about 18%. This would be true even if up to 15% became abusers, which is very unlikely.

We believe that physicians should talk with every patient about alcohol. Patients drinking too much or in an irresponsible fashion should be urged to modify their drinking patterns. If not drinking, and with no contraindications to alcohol use (*e.g.*, former abuser, drinking is against religion or morals, medical reasons), they should be given a balanced message on the benefits and dangers associated with drinking. Many would benefit from a glass of wine with their dinner every evening.

Summary

Since the news that wine and other alcoholic beverages may have some beneficial effects on health was first presented to the American public over six years ago, a huge amount of scientific data has been accumulated. The data have confirmed that wine protects against cardiovascular diseases and have demonstrated quite conclusively that moderate drinking is associated with a longer life. So my message is, for the best of health: "Don't drink too much, but, then again, don't drink too little either!" ■

Edited from presentation at WineTECH/GrapeTECH, February, 1998.



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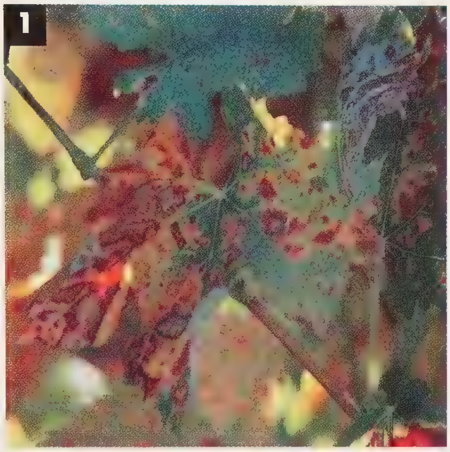
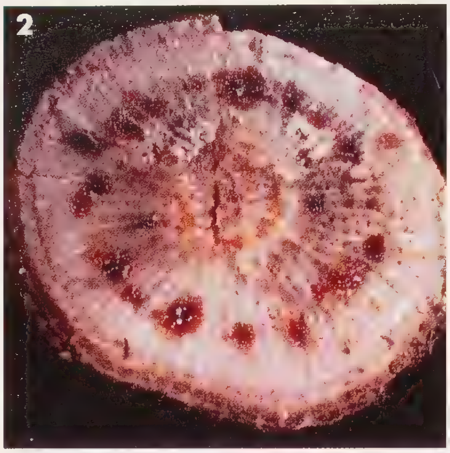
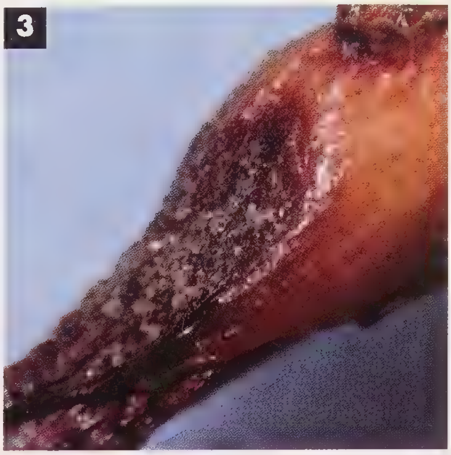




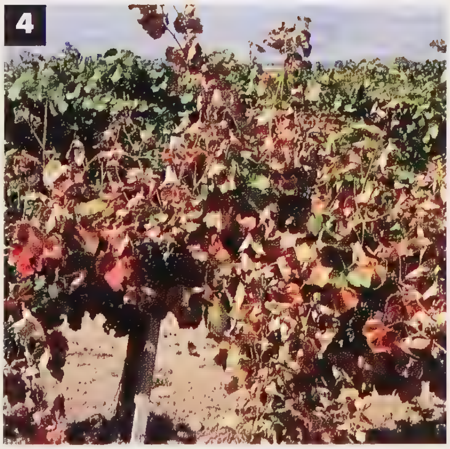


1. Foliage symptoms of *Phaeoacremonium* young vine decline (*Vitis vinifera* Thompson Seedless own rooted)

2. Cross-section of wood infected with *Phaeoacremonium inflatipes* with dark vascular elements

3. Root lesions caused by *Clindrocarpon obtusisporum*

4. Phaeoacremonium grapevine decline (*Vitis vinifera* Syrah on rootstock 110R) in Lake County, CA



YOUNG GRAPEVINE DECLINE in California

by Heather Scheck, Stephen Vasquez,
and W. Douglas Gubler, U.C. Davis
Diana Fogle, CDFA Plant Pest Diagnostics, Sacramento, CA

Black-foot disease caused by *Cylindrocarpon obtusisporum* and *C. destructans,* and *Phaeoacremonium* grapevine decline are affecting vineyard establishment in California. Although it is unclear just how widespread the problem is, vineyards throughout California are reporting economic losses resulting from replanting costs.

We have begun studies to help identify and understand the biology and epidemiology of these diseases in California and plan to develop an effective control program. Benefits would include the savings of millions of dollars due to vineyard down time and replanting costs. It appears that the onset of these problems coincides with the use of new rootstocks to combat Phylloxera. We suspect that these pathogens of young vines have been present for many years, but the planting and replanting of large acreages has increased awareness of the problem.

Symptoms

These diseases produce overlapping symptoms and generally follow a similar pattern of development. Affected grapevines grow slower, evidenced by reduced trunk diameter, shortened internodes, reduced foliage, and reduced leaf size.

When trunks of declining grapevines are viewed in cross-section, dark-brown to black streaking in the vascular elements is evident. This discoloration may occur in a few to most of the vascular elements. Foliar symptoms may appear as interveinal chlorosis, followed by necrosis and early defoliation. Uneven wood maturity, which is usually associated with a rapid desiccation event, is another possible symptom. Below-ground symptoms include a reduction in total root biomass, low numbers of feeder roots, and sunken, necrotic root lesions.

Sample sources / isolation results

Symptomatic young grapevines were submitted to our lab by University of California extension farm advisors, pest control advisors, and vineyard managers. Additionally, several collection trips were made to observe affected vineyards. We have consistently isolated four species of plant pathogenic fungi from symptomatic grapevines from northern, central, and southern California counties.

Cylindrocarpon obtusisporum was isolated from the roots and crowns of two- to five-year-old declining grapevines in Contra Costa, Lake, Madera, San Joaquin, Sonoma, and Tulare counties (Table I). Root isolations were made from the margins of necrotic brown-colored and healthy tan-colored root tissues. Isolation attempts from rootstock trunks (above-ground and below-ground) were from discolored areas of the pith and vascular tissue. *Cylindrocarpon obtusisporum* grew rapidly from infected tissue pieces and sporulated readily.

Cylindrocarpon species are soil-borne and infect grapevines through natural openings or wounds on the roots or other below-ground portions of the rootstock such as the pith. Over time, the fungus invades lignified tissues of the plant, resulting in a brown or black necrosis of the roots and vascular elements.

Cylindrocarpon destructans, a pathogenic species closely related to *C. obtusisporum*, was first reported in France in 1961 as the cause of "black-foot disease" on young vines. A recent study from the Bordeaux region of France reports that up to 50% of the grapevine mortality in new plantings there was due to this pathogen. *Cylindrocarpon destructans* has been found in California, but it is uncommon.

Table I — Sources of *Cylindrocarpon obtusisporum*

County	Rootstock	Scion
Contra Costa	5C	Viognier
Contra Costa	5C	Viognier
Lake	110R	Syrah
Madera	5C	Chardonnay
Madera	5BB	Chardonnay
San Joaquin	Freedom	Chardonnay
San Joaquin	5C	Pinot Gris
Sonoma	101-14	Pinot Noir
Sonoma	110R	Chardonnay
Sonoma	110R	none
Sonoma	101-14	none
Tulare	5C	Sauv. Blanc
Tulare	Harmony	Thompson
Tulare	5C	Sauv. Blanc

Table II — Sources of *Phaeoacremonium* species recovered from diseased rootstocks

County	Rootstock	Scion	Species
Contra Costa	5C	Viognier	*inflatipes*
Lake	110R	Syrah	*inflatipes*
Lake	St George	Muscatel	*chlamydosporum*
Lake	St George	Pinot Noir	*chlamydosporum*
Riverside	Sugra	Sugra	*aleophilum*
Riverside	Flame	Flame	*aleophilum*
Riverside	Superior	Superior	*aleophilum*
Riverside	Superior	Superior	*inflatipes*
San Joaquin	5BB	Syrah	*inflatipes*
San Joaquin	5C	Sangiovese	*inflatipes*
San Joaquin	5C	Sangiovese	*inflatipes*
San Joaquin	5C	Chardonnay	*inflatipes*
Sonoma	110R	Chardonnay	*chlamydosporum*
Sonoma	110R	none	*chlamydosporum*
Sonoma	101-14	Pinot Noir	*chlamydosporum*
Tulare	110R	Pinot Noir	*inflatipes*

Table III — Effect of *Phaeoacremonium chlamydosporum* on own-rooted Chardonnay grapevines.*

	Treatment**		
Measurements	Control	Inoculated	P
Caliper (mm)^	28	13	<0.0001
Leaves and petioles# (g)	169	50	<0.0001
Wood## (g)	281	67	<0.0001

* After inoculation, vines were planted and grown for 2.5 years at the UC Davis Plant Pathology farm.

** Mean of five replications.

^ Caliper of 1997 wood measured 2.5 cm above the soil line.

# Leaves and petioles were removed and dry weights were taken after four days in a 38°C drying oven.

## 1997 wood weights after four days in a 38°C drying oven.

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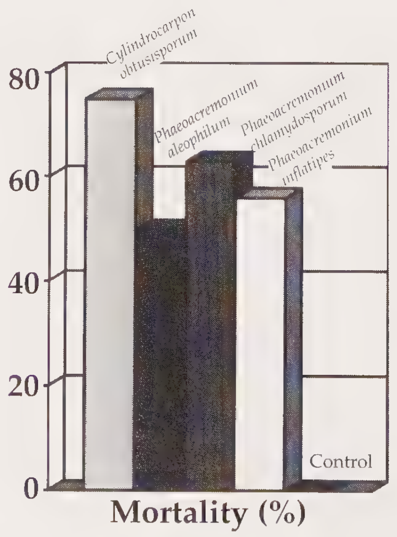
Three species of *Phaeoacremonium* have been isolated from declining young grapevines in northern, central, and southern California between 1995 and 1997. (Previous names for the fungus now called *Phaeoacremonium* include *Cephalosporium*, *Acremonium*, and *Phialophora*.) Rootstock isolations were made from the pith and woody tissue of below-ground portions of the rootstock. Diseased pith tissue was dark in color, and wood outside the pith was dry with a silvery sheen. *Phaeoacremonium spp.* were found in the crown and lower portions of the rootstock of young grapevines with decline symptoms.

This fungus grew slowly out of infected tissue but sporulated abundantly in culture. The species *Phaeoacremonium chlamydosporum* was isolated from wine grapevines in Lake and Sonoma counties; *P. inflatipes* from wine grapevines in Contra Costa, Lake, San Joaquin, and Riverside counties; and *P. aleophilum* from table grapevines in Riverside County (Table II).

Pathogenicity experiments

Greenhouse experiments have demonstrated that *Cylindrocarpon obtusisporum*, *Phaeoacremonium chlamydosporum*, *P. inflatipes*, and *P. aleophilum* are aggressive pathogens of grape seedlings (fig. 1). Seedlings are used for bioassays because they can produce symptoms rapidly and are certain to be disease-free at the beginning of a trial.

Figure 1
Pathogenicity tests with inoculated *Vitis vinifera* Carignane seedlings



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One-month-old seedlings (*Vitis vinifera* "Carignane") were inoculated by dipping their roots in a 10^6 spore/ml suspension for 30 minutes. After 60 days, 75% of seedlings inoculated with *Cylindrocarpon obtusisporum*, 50% with *Phaeoacremonium aleophilum*, 63% *P. chlamydpsporum*, and 56% with *P. inflatipes*, had died. The pathogens were easily recovered from both the roots and the stems of the moribund seedlings. Control plants treated with water remained healthy, and pathogens were never detected.

Field inoculations to confirm *Phaeoacremonium* as a pathogen of young vines were done at UC Davis. In August 1994, own-rooted grapevines (*Vitis vinifera* "Chardonnay") were inoculated with a 10^6 spore/ml suspension and planted in 3.8L pots. Spores were introduced by drilling a small hole into the crown and filling the hole with spores or cutting the roots, then dipping the vine into the spore suspension for 30 minutes. Control plants were treated in the same manner but were inoculated with sterile water.

In February 1995, these vines were planted in the field. In October 1997,the test grapevines were removed from the field and destructively sampled. Both inoculation methods gave similar results, and the data were combined for analysis.

All inoculated grapevines were visibly stunted with small chlorotic leaves. The vascular elements and the pith near the crowns of inoculated vines were discolored. The caliper of the wood, measured at 2.5 cm above the soil line, was 28 mm for the control vines, compared to only 13 mm for inoculated vines, a reduction of more than 50%. (See Table III).

The dry weight of leaves and petioles was approximately three times less and the dry weight of wood was approximately four times less in the vines inoculated with *P. chlamydosporum* compared with water-inoculated controls.

Pathogen survival

We've demonstrated the ability of *Phaeoacremonium inflatipes, P. chlamydosporum* and *P. aleophilum*. to survive in nutrient-poor sand for over 28 days. It is possible that these pathogens are introduced into the grape rootstocks during the callusing

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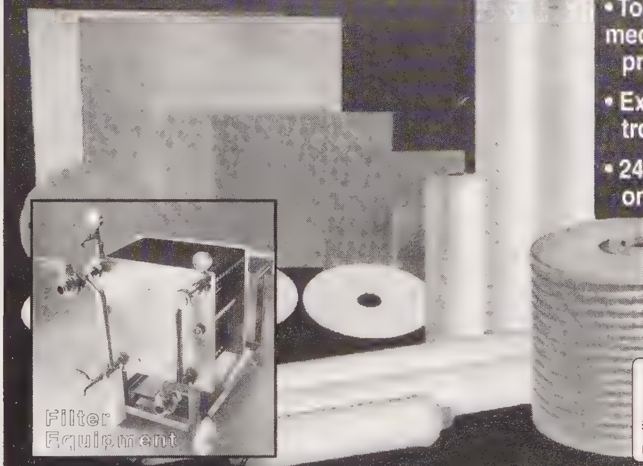

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stage of nursery production.

In the callusing process, cuttings are removed from cold storage and placed in heated bins of sand, sawdust, or peat moss for 25 to 48 days. The wounded end of the cutting forms a callus layer and initiates rooting. Small pathogen populations might be introduced into the callusing trays from infected cuttings. Once in the warm, damp media, they could spread through the callusing tray.

We have begun research with assistance of two commercial nurseries to determine whether these pathogens infect vines during commercial production of nursery stock.

New disease names

Fungi in the genera *Cylindrocarpon* and *Phaeoacremonium* have been consistently isolated from young grapevines showing decline symptoms. *Cylindrocarpon spp.* are generally recognized as relatively weak pathogens on vegetables, small fruits, tree fruits, forage, ornamentals, and conifers and therefore of limited economic importance. Production of chlamydospores allows the pathogen to survive in soil for extended lengths of time in the absence of a suitable host plant.

Cylindrocarpon destructans has been identified as causing a disease of young vines in France known as black-foot. One California isolate of *Cylindrocarpon* was identified as *C. destructans* in 1994. Since 1994, *C. obtusisporum* has been the most commonly isolated species.

However, because of the similarities in symptom expression caused by the two closely related species of *Cylindrocarpon*, we propose to maintain the name "black-foot disease" for decline caused by either species. We propose the name "*Phaeoacremonium* grapevine decline" to define the symptoms associated with infection by *Phaeoacremonium* spp.

Hence two new diseases of young grapevine have been identified in California: black-foot, caused by *Cylindrocarpon obtusisporum* or *C. destructans*; and *Phaeoacremonium* grapevine decline, caused by as many as three species of *Phaeoacremonium*.

Fungi in the genus *Phaeoacremonium* have also been implicated as the pathogens in "black measles" or "esca" disease of older grapevines (Vasquez and Gubler, unpublished data). Black measles is a destructive disease of woody tissues in grapes and has an extensive range of symptoms. These include stunted growth and dieback, leaf chlorosis and necrosis, raisining of fruit, plugged xylem vessels, and occasionally sudden wilting and/or death of vines. Black measles symptoms have been seen in some young vines infected with *Phaeoacremonium*.

These organisms have been in California for many years, and it is unclear why pathogens formerly associated only with older grapevines have recently emerged as a threat to young grapevines. Cultural practices or environmental conditions may have shifted in favor of the pathogens.

For example, at several sites, grapevines that were exposed to low temperatures in the winter of 1990/1991 have showed typical decline symptoms. Alternatively, perhaps new strains of these pathogens have evolved, or perhaps the huge planting boom has simply increased awareness of young vine decline.

Thus far, no obvious relationship exists between rootstock or scion varieties and the severity of either *Cylindrocarpon* black foot disease or *Phaeoacremonium* grapevine decline. Because of the phylloxera epidemic, AXR-1 rootstock, used almost exclusively for 20 years, has been replaced by other rootstock varieties. The new rootstocks may prove to be highly susceptible to these diseases, particularly if pre-disposed by devigorating conditions. Investigations into differences in susceptibility and symptom expression in rootstock varieties are in progress.

Due to the similarity of symptoms, diagnosis of *Cylindrocarpon* black foot disease or *Phaeoacremonium* grapevine decline should never be made solely on the basis of visual symptoms. Young grapevines can fail for many reasons, including poor nutrition, improper irrigation (too much or too little), poor planting techniques, virus-induced incompatibility, nematodes, and poor quality planting stock.

Vascular symptoms can also have many biotic and abiotic causes. Black or amber streaks seen in the vascular elements are the result of deposition of phenolic compounds in response to wounding, a general defense mechanism of the plant. Physical injuries to the grapevine due to root tearing, disbudding, or other trauma during production or planting can result in phenolic depositions and black discoloration, or even outright death of tissue.

Other terms have been used in the popular press to describe the visual symptoms of phenolic deposition and formation of gums and tyloses in the vascular tissues, including "black goo" and "black xylem disease." These names do not encompass the full range of symptoms associated with *Cylindrocarpon* black foot disease or *Phaeoacremonium* grapevine decline nor do they provide a description of the

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problem adequate enough to be of value to plant pathology or to the viticulture industry.

Our lab at UC Davis is focusing on increasing our understanding of pathogen biology, disease epidemiology, and symptom development in *Cylindrocarpon* black foot disease and *Phaeoacremonium* vine decline. Studies are underway to determine how these pathogens survive and spread. Sources of pathogen inoculum will be identified. Eventually, with an increased understanding of the disease biology, effective control strategies can be developed. ■

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Heather J. Scheck is a post-doctoral scholar, Stephen Vasquez is a graduate student, and W. Douglas Gubler is an extension plant pathologist, all with the University of California, Davis. Diana Fogle is an agricultural biological technician at the California Department of Food & Agriculture, Sacramento. *This research was funded in part by the California Grape Rootstock Commission and Grapevine Improvement Advisory Board.*

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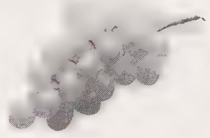

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INTERNATIONAL establishment and defense of APPELLATIONS

by Richard Mendelson

This global perspective on wine appellations is offered with particular reference to the winegrowing countries with which I am most familiar: France, Australia, and the U.S. These three countries are particularly appropriate to this discussion because of their different stages of appellation development.

Geographic indicators (GI) in Australia date from 1994. American Viticultural Areas (AVA) in the U.S. are 20 years old, with 131 AVAs established during that period. The French *Appellation d'Origine Contrôlée* (AOC) system was developed in 1935, and there are 450 AOCs today.

I will devote equal time to the establishment of wine appellations and their defense because, as we've learned recently, you can't have one without the other.

To define some key terms, geographic designations for wine consist of three basic types:

- Indications of *source* refer to the customs notion of origin. This is the place where the product was manufactured or where the last substantial processing occurred.
- Appellations of *origin* indicate the place where the grapes are grown, their provenance. There is a close relationship between the product and the geographical designation due to the particular viticultural environments, established as viticultural areas in Canada and the U.S., and as GIs in Australia.
- Controlled appellations, in European Community (EC) parlance, are *Vins de Qualité Produits dans une Région Déterminée* [VQPRD] (quality wines produced in specified regions). They exist in nine major member states of the EC: France, Italy, Spain, Portugal, Greece, Luxembourg, Austria, Germany, and the United Kingdom. Many of these countries have provisions addressing seven different topics which govern the appellation:

1. The area of production, whose boundaries are demarcated.
2. Grape varieties, which are specified.
3. Cultivation methods (density of planting, pruning, etc.).
4. Winemaking methods.
5. Minimum natural alcohol content by volume, before any enrichment.
6. Yield
7. Organoleptic analysis, to eliminate wines which don't meet minimum quality standards.

In the early 1980s, I gave a talk in Bordeaux regarding development of the U.S. appellation system, and a very esteemed Bordelais predicted confidently that the U.S. would follow the path France took from 1905 to 1935, proceeding from AVAs (what the French termed *appellations simples*) to AOCs, that is, from simply naming a grapegrowing region to controlling quality factors. We've certainly seen no evidence of that to date. In fact, establishing controlled appellations would be contrary to both the American entrepreneurial spirit and the law (the government has a profound fear of making what might be construed as comparative wine quality determinations). Any such controls in the U.S. will be left to private industry on a voluntary basis through what I call the privatization of appellations.

Edited from a presentation by Richard Mendelson to an appellation seminar sponsored by Robert Mondavi Winery, Oakville, CA, March 1998. Mendelson is an attorney with the Napa law firm of Dickenson, Peatman & Fogarty where he specializes in alcohol beverage law and land use planning for wineries and vineyards. He is immediate past president of the International Wine Law Association, headquartered in Paris.

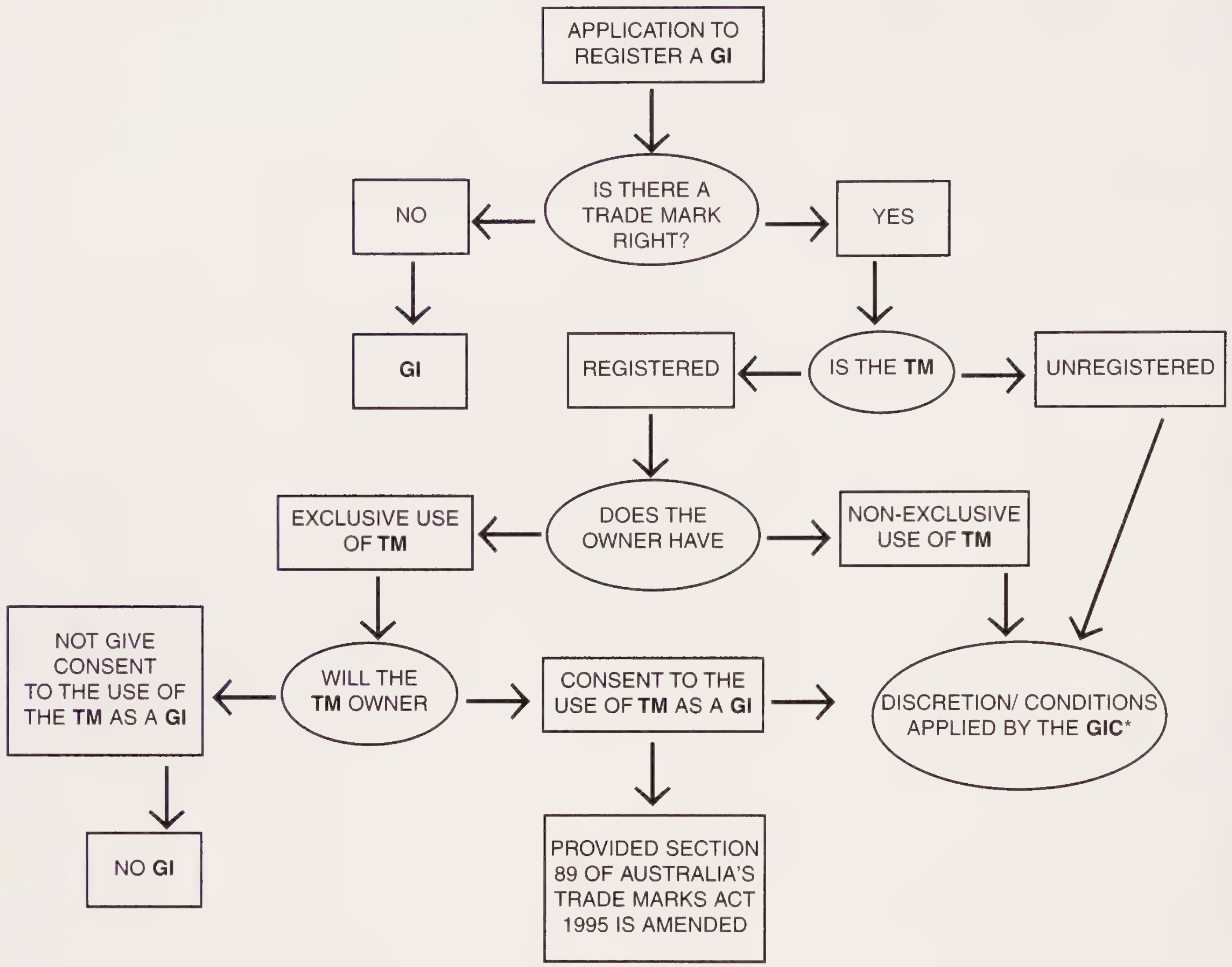
AOCs in France

In the last two years, there have only been four new AOCs in France. In fact, most new AOCs aren't even for wine, but for cheese and farm products (olives from the Valley of Baux-de-Provence, olive oil from Nyons, mussels from the Bay of Mont St. Michel, potatoes from Ile-de-Ré, etc.).

The principal activities of the *Institut National des Appellations d'Origine* (INAO) in the wine sector are protecting AOCs around the world (more on that later) and dealing with requests for boundary adjustments of existing AOCs. In 1997, the INAO investigated over 55 areas for boundary modifications; these are done on a parcel by parcel basis.

In discussing French wine appellations, we must not overlook the *Vins de Pays* (VdP or table wine) category. More than 400 million gallons of VdP wine are produced annually, comprising about 25% of all French wine production; Languedoc-Roussillon in the south of France accounts for more than 60% of the total VdP production. These are essentially table wines with the provenance noted on the label, either by department or region.

The VdP category has no parcel-by-parcel boundary definitions and liberal yield limits [average AOC yield of 53.6 hl/ha (3.6 tons per acre) compared to 80 to 100hl/ha (5.6 to 7 tons per acre) in Languedoc-Roussillon]. There are "recommended" varietals, but not the same stringency of AOC varietal and planting controls. Wineries are able to indicate the varietal on the label, which is prohibited under AOC rules. In sum, VdPs constitute more of a free market system than the AOC regime and have been quite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* GIC is the Geographical Indications Committee of the Australian Wine & Brandy Corporation, which administers Australia's appellation program.

This chart is excerpted from "Geographical Indicators Up-to-date." (1997) by Ian Mackley, presiding member of the G.I.C.

successful in the market because of their excellent quality/price ratio.

There is a healthy competition among VdPs (especially in Languedoc-Roussillon), new AOCs in the same area of southern France (Corbières, Minervois, Coteaux de Languedoc), and regional AOCs (Côtes du Rhône, Bordeaux). VdPs emphasize varietal labeling and product uniqueness (such as Mas de Daumas Gassac). New AOCs offer bold label identity with the name of their region (Corbières and Minervois).

Regional AOCs — by which I refer not to the *grand chateaux*, not the *petits chateaux*, not even the "villages" designation, but rather supermarket-driven generics — are often marketed by association, by alluding to the *grand crus* in their midst. Some call this bow-tie-image marketing. In my view, Bordeaux harmed itself long ago by not requiring every wine from that region to state *"Vin de Bordeaux"* on the label. The present *Comité Interprofessionel du Vin de Bordeaux* (CIVB) campaign of "Those who know choose Bordeaux" doesn't help if consumers don't first know what is or is not Bordeaux.

One of the smartest things Napa Valley did years ago, as the sub-appellation movement began, was to require that the name Napa Valley appear in direct conjunction with the name of any sub-appellation wholly contained within the Napa Valley. So it's not an Oakville wine, but Napa Valley-Oakville. This preserves what, in domestic and overseas markets, is the crown jewel, Napa Valley.

One last thing about the French appellation system. The old idea in France was that VdP was the stepping stone to AOC. Once these regions developed quality

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and reputation in the marketplace, they would become AOCs via the intermediate category of *Vin Délimité de Qualité Supérieure* (VDQS). The facts don't bear that out, however, as only one VdP in the last 12 years has been elevated to VDQS status, and only six VDQS have become AOCs in the last decade. Is this because the regions didn't develop dominance or international reputation? I don't believe so. As one of my French friends suggests, a VdP is a wine for which the producers ***don't want*** AOC recognition.

Nevertheless, the pendulum could swing toward AOC in the Midi region in the future. That is happening today in Tuscany, where the producers of *Vino de Tavola* (Italian table wines), who rebelled against the controlled appellations, are now returning to the *Denominazione di Origine Controllata e Garantita* (DOCG) system. The *Vino de Tavola* renegades have found that the appellation system is simply adopting their rules as part of the new "tradition."

AVAs in the U.S.

U.S. wine appellations indicate origin or provenance only. Some are political or administrative appellations (country, state, county), and others are viticultural areas. The Australian and Canadian appellation systems are modeled on the U.S. system, with the same blend of appellation criteria.

Appellation petitioners start with a locally or nationally recognized name and connect that name to a boundary, either historical or current. They also must provide evidence that geographic features distinguish the area viticulturally.

Unlike the French system, 100% grape origin from the named appellation is not required, only 85% (a sore point among European *cognoscenti*). Appellations in the U.S. are not defined by parcel, and there are no associated controls.

The last 20 years have been a learning experience for all those involved with AVAs — producers, the trade, consumers, and government regulators. The Bureau of Alcohol, Tobacco & Firearms (ATF) originally was forced into the role of appellation arbiter — a role they didn't relish and for which they had no particular competence. This explains the inclusionary bias that pervaded the early years of the AVA system and still exists today. As you can well imagine, historical and viticultural data rarely coincide in a single appellation boundary. If there is some historical or viticultural basis for an area to be included in an AVA, ATF has tended to include it.

The appellation system we've developed in the U.S. ("ask and ye shall receive") has produced a hodgepodge. Many of our 131 AVAs have literally died on the vine, lacking consumer awareness and acceptance. In the world of appellations, the old adage "order rarely arises out of chaos" is certainly true. The appellation program has no formal organization, no hierarchy, no size limits. AVAs in the U.S. range in size from Cole Ranch (503 acres) to Ohio River Valley (16.6 mil-

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lion acres in four states). We may speak of sub-appellations, but no such thing actually exists under appellation regulations.

In the U.S., it falls to the wine industry to develop a coherent sense of appellation structure. One of the first lessons learned in Napa Valley was that overlapping viticultural areas are hard to explain to consumers, although Carneros (part in Napa Valley, and part in Sonoma Valley) has done a good job. While the ATF hasn't changed its regulations, I'm glad to report that among the first questions asked by ATF about any new Napa Valley appellation is whether there is any overlap.

The fact that there is an area in Sonoma County which is simultaneously located in the Alexander Valley, Russian River Valley, Chalk Hill, and Northern Sonoma AVAs reminds me of the old French yield rules, now abolished, called *le sytème en cascade*. Under these rules, growers in the Clos de Bèze appellation, who were restricted to a yield of say 30 hl/ha, would still produce 70 hl/ha, but 30 of it would be called Clos de Bèze, another 20 Gevrey Chambertin, and the other 20 would be labeled as Bourgogne. When living in England in the 1970s, I used to hunt for Clos de Bèze which was labeled Bourgogne at a fraction of the price. This was fun for me but a consumer farce.

What is the next appellation development in AVAs? The notion of typicity is already taking hold — the linking of a particular varietal with a given *terroir*. This is not being done by legislation, but through the private efforts of grower-vintner appellation groups. Several years ago, the Carneros Quality Alliance (CQA) funded an organoleptic analysis of Carneros-grown Pinot Noir (supervised by Ann Noble from UC Davis) to identify its key flavor components. For several years after that, the CQA produced an archetypical Pinot Noir each vintage under a CQA label. Today, the Stags Leap District (SLD) appellation group is selling a mixed case of newly released SLD Cabernet Sauvignons to consumers so they can compare SLD wines and explore the common features of texture, flavor, and other wine characteristics.

GIs in Australia

The Australians are developing their appellation system with zones, regions, and sub-regions. A few appellations already have been established (30 zones, five regions, and one sub-region, to be precise), and many more are pending (38 regions and sub-regions). The large Australian producers who have often blended their wines from grapes grown in various states are expected to continue to rely heavily on "Product of Australia" or perhaps "Product of Southeast Australia."

This is not to suggest that GIs are unimportant or noncontroversial. The current brouhaha over the Coonawarra GI is perhaps the best indication of the level of interest. It's *deja vu* for the Napa Valley some 15 years after its establishment as an AVA, although Coonawarra is a smaller geographic area. If Coonawarra were defined by the classic *terra rossa* soil, the area would be noncontiguous as that soil is found in many places. Some have suggested the need for a "Greater Coonawarra" appellation. All forms of evidence have been adduced.

The Coonawarra controversy, which already has lasted more than 2½ years, has no obvious end in sight. As has been the case in the U.S. and France with hotly contested appellations, this is a battle royal and may well end up in the courts.

Defense of appellations

Europeans have consistently argued for the supremacy of appellations over other wine label indications. This has been part of a perennial battle waged by Europeans worldwide to recapture their historical appellations which have fallen into generic or semi-generic usage (Chablis, Burgundy, Champagne, etc.) and to prevent this type of loss from happening again in the future. This explains why the French fought so hard against Gamay Beaujolais, which has been used as a varietal designation in the U.S., including filing a lawsuit against the ATF. Following the conclusion of ATF's

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recent rulemaking, the name Gamay Beaujolais is subject to phase out in the U.S. by the year 2007.

Although Europeans can't stop generic or semi-generic labeling in countries such as the U.S. and Canada, they have sought to take away export markets for these products. They succeeded in Japan and are now working on China, Peru, and Argentina. In Australia, they dealt with this issue by enacting the Australia-EC wine treaty of 1994. The EC guaranteed Australian access to the European wine markets in return for phasing out Australian use of semi-generics. You will not see Hunter Valley White Burgundy or Barossa Valley Claret in the future.

Europeans have run into their own problems with the appellation supremacy doctrine. When Torres Vedras was established as an appellation in Portugal, the Torres family was unhappy because they might have been forced to cease using their own name on their wines. This problem was resolved by a 1991 amendment to the EC regulations, which provides that if a geographical brand name was in use for at least 25 years prior to the establishment of an appellation and if that mark identifies the winery owner or predecessor in interest, it can continue to be used, even if it's established as an appellation. This is a rule of peaceful coexistence.

The enforcement of appellation integrity got a kick start in the U.S. in the recent court case involving the Rutherford Vineyards label. Many observers viewed the label owned by the Bronco Wine Company as an attack on the U.S. appellation system. Without dwelling on the facts of that case, at issue was the right to use a geographic brand name (Rutherford Vineyards) whether or not the grapes came from the geographic area referred to by that brand name (Rutherford AVA). Specifically, Bronco's Rutherford Vineyards wine did not qualify for the Rutherford AVA. However, there was an approved Certificate of Label Approval (COLA) for the product. The label did identify the true source of grapes (California appellation). The court documents reveal extensive trademark-style discussion — of first-use date and whether that was before of after NAFTA or TRIPs.

Then there are ATF's own "grandfather" rules for geographic brand names, which are separate from trademark laws. These are complicated legal issues, as the pleadings in *Bronco Wine Co. versus ATF* will attest. But Judge Robert Coyle was quite clear on the matter and dismissed the crux of Bronco's lawsuit against ATF.

The present status, in my view, is that trademark rules don't control the use of geographic brand names on wine labels, but ATF's own grandfather rules for geographic brand names do. ATF's rules provide that if there is a COLA with a geographic brand name before July 7, 1986 (in the Bronco case, Rutherford Vintners, not Rutherford Vineyards), a winery can continue to use it if the wine qualifies for the Rutherford AVA or is labeled with a county appellation or AVA.

Under present ATF rules, the use of state appellations on grandfathered labels is prohibited. Bronco argued that consumers weren't being deceived, that the California appellation was noted. Bronco also contended that ATF was taking away what it had bought from Bernard Skoda, previous owner of the brand, namely the rights to the names Rutherford Vineyards and Rutherford Vintners.

Stepping back from that controversy, it is important to note that ATF's present grandfather rule is already generous. Bernard Skoda's Rutherford Vintners brand had always been Napa Valley wine. ATF's grandfather rule allowed that brand to grow and not be Napa Valley so long as there was an appropriate appellation designation (county or AVA). Wineries were not required to phase out geographic brand names.

Since the lawsuit, Bronco has changed its label (*e.g.*, "Rutherford Vinters Lodi"). There has been much discussion and many proposals to change ATF's grandfather rule, including the appointment of a Wine Institute committee to study this issue. One proposal is for a "rolling grandfather rule," which says if you have a COLA or a trademark registration of a geographic brand name which predates the establishment of an AVA by the same name, you can continue to use the brand name even if the grapes are not from that area. If adopted, this could result in a "run" on geographic names. Vintners could rush to use as many geographic names as possible to claim their legal right to them. This happened in France in 1911 when the French turned a fledgling appellation system over to the courts for administration. It could happen here.

Any solution which expands the present grandfather rules for geographic brand names needs to be examined closely. We must consider ways to distinguish these brand names from AVAs. In my view, ATF should at least allow, if not require, any AVA smaller than a certain size to add the modifier "district" to its name. This would help prevent consumer confusion.

The basic principle is straightforward. We must preserve and protect the integrity of the appellation program. We can't dilute it. We must seek to make appellations meaningful for consumers. This is worth fighting for.

How complicated can this matter be? Chart I presents a "trademark/GI" flow chart which is proposed for use in Australia. In real life cases, it is even more complicated. Look at the Great Western dispute in Australia.

Great Western is a wine region northwest of Melbourne. Seppelt's Great Western Champagne is a Southcorp Wine Co. brand name, but the company has not registered "Great Western" as a trademark because of opposition from Best's Great Western, another winery using that name.

Along came growers and vintners to this area who wished to use the name as a geographic indicator. Add as a complicating factor that some percentage of Seppelt's grapes for its Great Western sparkling wine don't come from the Great Western region. Yes, you can probably guess correctly: the matter is currently in contention and may be headed for the courts.

Conclusion

Appellations will become increasingly important worldwide as consumer tastes become more oriented to the concept of *terroir*. We must strive to create appellations which are meaningful to consumers and then we must defend them. ■

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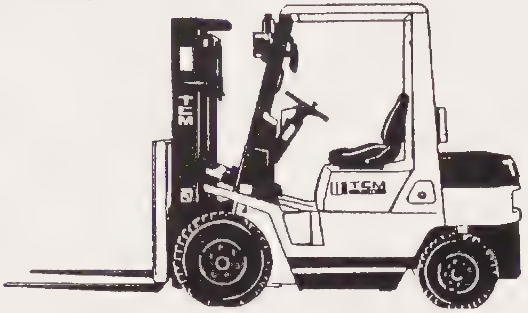

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IN MEMORIAM

Maynard Andrew Amerine

Professor Emeritus,
Department of Viticulture & Enology
University of California, Davis

1911 - 1998

California enologist, teacher, and writer, Dr. Maynard Amerine, Professor Emeritus, Department of Viticulture and Enology, University of California, Davis, died of natural causes at his home in St. Helena, March 11, 1998.

Professor Amerine was born in San Jose but grew up and went to school in Modesto, where his father raised grapes and peaches. In 1932, he earned a bachelor's degree in plant science at UC Davis and completed studies for a doctorate in plant physiology at UC Berkeley four years later.

While working on his doctoral degree, he was hired by Dr. Albert J. Winkler, head of the UC Davis Viticulture Department, as a junior enologist, assigned to make experimental wines from grapes grown in each of California's grapegrowing areas. These studies became the basis for the Winkler-Amerine system of classifying winegrowing regions by measuring heat summation, completed in 1938.

During World War II, Amerine achieved the rank of major in the Chemical Warfare Service, U.S. Army, and was stationed in Algeria and India. On his return to civilian life, he joined the Davis Viticulture Department faculty as an associate professor. Full professorship followed in 1952, and from 1957 till 1962, he served as chairman of the department.

The bibliography of Amerine's works contains more than 400 scientific papers, on subjects of interest to a broad spectrum of audiences: scholars, grapegrowers, winemakers, politicians, wine connoisseurs, and the general public. Many were written in collaboration with colleagues in the department, notably "Wine: An Introduction," co-authored with Vernon L. Singleton, in 1965. "Wines: Their Sensory Evaluation," published in 1976 with mathematician Edward Roessler, helped establish an objective basis for wine tasting. Perhaps his best known book among lay readers as well as the *cognoscenti* is *University of California/Sotheby Book of California Wine*, published in 1984.

Amerine was honored for his research accomplishments in 1962 and 1964 as the All-University Lecturer and as the UC Davis Faculty Research Lecturer in 1964. He retired from UC Davis in 1974 but remained active as a writer and lecturer, conducting a series of wine tours abroad. He served as a consultant to the California Wine Institute from 1975 through 1990.

In addition to his recognized excellence as a research scholar, Amerine was also an outstanding teacher, and scores of winemakers across the U.S. look back to their days under his tutelage with respect for his abilities. In 1978, an endowment established the Maynard Amerine Chair of Enology and Viticulture.

Amerine played a key role in developing a collection of viticultural and enological literature at the UC Davis Shields Library, contributing his personal collection of more than 3,000 books and pamphlets to the library in 1972. He was one of the founding supporters and a member of the board of directors of the Napa Valley Wine Library.

Amerine's investigative nature led him to all the major wine-producing regions of the world. In 1937, he took a leave from the University to study in Europe. He returned to Europe for a six-month stay in 1947 to study dessert wine production in Portugal, the Madeira Islands, Spain, Italy, Greece, and France.

He spent all of 1954 in France, southern Europe, and Morocco on a Guggenheim fellowship, and his travel records show that 1966 was the only year not marked by a wine journey. His visits abroad contributed to his linguistic skills, and he was fluent in five languages.

Dr. Amerine was the recipient of numerous awards and decorations from virtually every wine-producing region. Among the prestigious honors were the Croix d'Officier of the Ordre National du Merite, the Chevalier de Merite Agricole, and the Merit Award and presidency of the American Society of Enology.

The family requests that memorial contributions be made to the Maynard A. Amerine Fund, Department of Viticulture & Enology, University of California, One Shields Ave., Davis, CA 95616. ■

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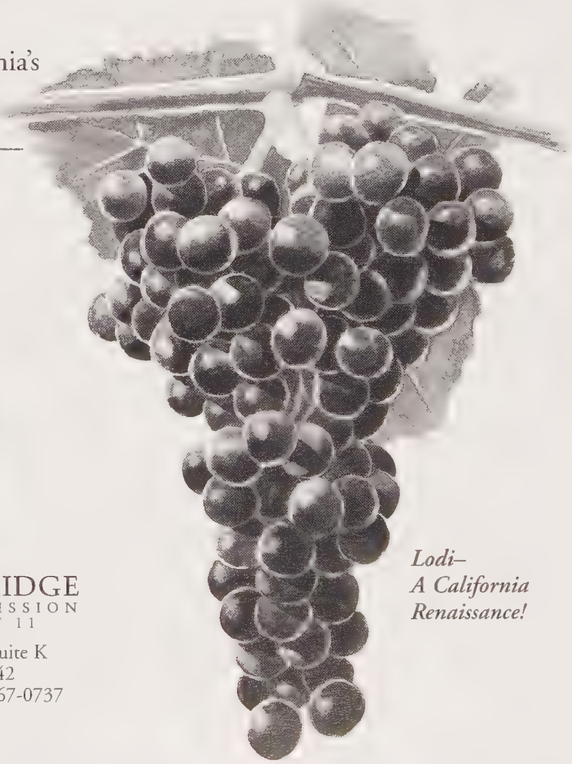

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BETTER TASTING ROOMS

Avoiding theft in the tasting room

by Craig Root

While the topic of theft is not a pleasant one to consider, it is a fact of life that can cause real trouble for your tasting room. In the Napa Valley in 1997, it was discovered that a man posing as a construction worker had stolen dozens of cases of wine from various wineries. I know of a winery where an employee was caught using fake voids (a concept explained below) to steal tens of thousands of dollars. There are two basic types of theft: external (or customer) and internal.

External

The good news is that, by and large, tasting rooms attract a pretty reputable group of visitors. There are always exceptions to any rule, but ask yourself this question: "How many bounced checks do I get every year in my tasting room?" In most cases, the answer is: "very few," so we are lucky to be dealing with a very small larcenous minority who visit your facility.

Shoplifting — One way to spot shoplifters is that they spend a lot more time looking around to see if you are watching them than they do looking at the merchandise. The normal shopper is looking at the merchandise 70% of the time, and looking around the shop 30% of the time. With shoplifters, reverse those percentages. Also, look out for people with backpacks, bags, and newspapers because they are great receptacles in which to hide stolen merchandise. Keep your valuable small items in glass cases which the staff has to open for each customer.

Counterfeit money and traveler's checks — These types of fake currency feel wrong when you touch them, particularly the traveler's checks. It is usually too difficult or costly for the counterfeiter to produce the type of embossing on traveler's checks. In addition, U.S. currency bills $5 and larger have a security strip which is extremely problematic to reproduce. If you hold a bill up to the light, you will be able to see and read the strip.

Storage of currency — Don't leave money around all weekend. Frequently on busy weekends and especially on holidays, wineries fail to make night deposits. That means that by Monday night of a three-day weekend, there is a considerable amount of cash in your safe or strongbox. Avoid this temptation. If you are held up, never ever try to resist, or verbally or physically interfere with the robber. Let them have what they want. Instead, try to focus on giving the police a good description.

Common sense — Don't leave the winery by yourself, particularly in the dark. When closing up your tasting room, try as much as possible to leave with a fellow employee.

Be observant — Keep an eye on your visitors. This is especially important on tours; people have been known to wander away from tours and cause all kinds of problems in the production area. Also, use deadbolt locks on important doors, such as storage closets.

Mark your important keys with the words "no duplication." Should they be lost or stolen, you will be protected.

Internal

Now we come to the topic which no one likes to consider, but which is nevertheless a major factor in tasting room theft. We all hate to think that Tony, the beloved janitor, is putting an unpaid for bottle of wine into his car trunk from time to time, or that a trusted manager is stealing cash, but these events do happen. Here are some suggestions in this area.

Bad morale leads to theft — It's important as an owner or manager to do some soul-searching. Are you paying your people fairly? Are you demanding? Do you remember to compliment when it is warranted? Even an honest manager who is constantly being hammered to work 60-hour weeks and feels unappreciated, will eventually feel that he or she has the *right* to take home a six-pack of wine. That is theft and of course it's not right, but it's also human nature. When people feel abused, it can be a powerful rationalization to take money or product, so pay close attention to this area.

Check references — When hiring new staff who will be handling money, wine, or non-wine items, check references, and don't hesitate to do a background check in your state for a minimal cost. Multi-state checks are much more costly. Research a good private investigation service in your area. It's better to pay $100 to $200 for a background check than to lose thousands of dollars in cash and merchandise.

Guard against fake voids — This is a very common way to take money from a cash register. For those of you unfamiliar with the process, let me explain. If a customer decides to buy a case of wine worth $200, you would enter that amount into your register. The customer then decides against the purchase, so you have to void the amount which you entered so your register will not be off by $200. However, if no sale was entered and you push the void key in that amount, the machine will subtract that $200 from the total. A thief can then take the $200 out, and the money will still balance at the end of the day. There are three ways to catch the culprit:

a) Have your manager be the only one who is authorized to do voids. If this procedure is too much trouble, make sure all voids are initialed and state a reason.

b) Institute and establish good inventory control. When the cash register subtracts the $200, it also subtracts the case of wine — so you should be able to pick it up in your inventory.

c) It may be a manager who is doing the fake void. So have someone from another department, such as accounting, monitor your cash register tapes throughout the year.

Ringing no sale — Another common area of theft is an employee ringing "no sale" for a paid tasting. If you are charging $3 for tasting, and a party of six comes in, that's a quick $18 if he or she pushes the "no sale" key instead of the "paid taste" key. This is extremely difficult to catch. Most customers don't ask for a receipt for tasting, and different tour guides pour different amounts of wine no matter how much you stress uniformity. Thus, it's a problem which is very hard to determine from inventory control. If you suspect someone is doing this, you may wish to use a "mystery shopper" to catch the person.

Outside contractors — Catering and janitorial staff can be a problem, because they are frequently in the building after hours. Make sure these folks know that you keep a tight lid on inventory, both wine and non-wine.

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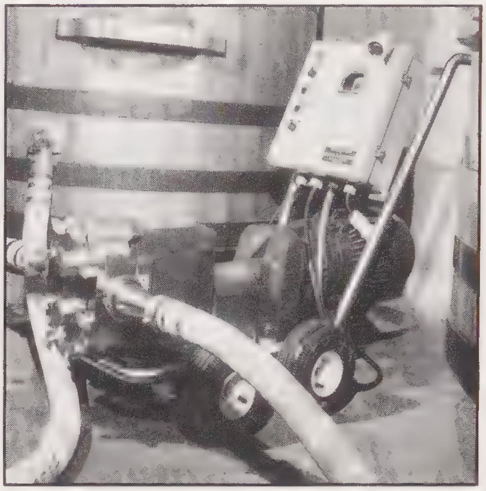

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Employee charging — Don't let employee charging get out of control. We've all forgotten our checkbooks when we needed to buy wine for a personal event that night, and received permission to pay for the wine the next day. However, I've seen cases in which there were so many charges over so long a period of time that it became impossible to collect the money due. Set time limits for repayment, such as the following work day.

Thorough security — Make sure that your security system registers exactly who is in the building after hours.

An additional note on alarm systems: This area can pose problems, particularly with after-sales service from the security provider. It is no fun being awakened at 3:30AM because an alarm is sounding, and the security personnel can't tell which building it is in, or else speak very poor English.

Check with local law enforcement agencies to see which security system is the most professional in your area. Talk with other tasting room managers to determine which security systems are reliable. Finally, quiz your security service sales representative on how efficient their response systems and personnel are in the event of an alarm.

It's not just financially painful to be ripped off. In the cases of internal theft which I've observed, it is also emotionally grueling to find out that a trusted employee has been stealing from you. It's essential to be proactive to avoid this wrenching experience. ■

Please look for future articles in this series. If you have comments or suggestions, call Craig Root at 707/963-7589.

Craig Root is a 26-year veteran of the wine and hospitality business, including 15 years at Beaulieu Vineyard. He has worked in all capacities at hospitality centers, primarily as manager. For the past four years, he has served as a consultant for visitor centers through his own company, Craig Root & Associates.

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ADELSHEIM VINEYARD

TRADITIONAL CAVE DESIGN USING MODERN TECHNIQUES

Adelsheim Vineyard, near Newberg, is one of Oregon's pioneering Willamette Valley wineries, producing Pinot Noir, Pinot Gris, and Chardonnay. The winery's first commercial production of 1,300 cases in 1978 had climbed to 13,000 cases by 1987. As production increased, winemaking in the basement of the Adelsheims' home moved into an adjacent 4,500 sq. ft. structure, which was completed in 1984 and immediately filled to capacity.

In 1992, owners David and Ginny Adelsheim began planning for a new production facility to meet future growth. Expansion was planned in two phases, coinciding with development of new vineyards. Phase I was completed before the 1993 harvest; phase II was completed in 1997. The finished facility has an ultimate capacity of 30,000 cases.

An Oregon vintner who "cut his teeth" at the Lycée d'Agricole in Beaune, France, David Adelsheim has a natural affinity for Burgundian varieties and production techniques. During development of an overall plan for the facility, David, Don Kautzner (winemaker), and I explored design and construction of classic and contemporary wineries, visiting more than 40 facilities in Oregon, California, and Burgundy. Future needs of Adelsheim's winery were anticipated by incorporating and adapting many ideas from these winery visits.

The new 28,000 square foot facility, built into a hill to take advantage of gravity flow, incorporates four levels. The upper level affords access for filling and punch-down of 44 open top fermentors. The intermediate level, eleven feet below, houses the presses and provides access to unloading the fermentors. Three feet lower is the largest level containing barrel cellars, main tank room, lab, wine library, bottling, and case good storage. Truck access to loading docks is four feet lower.

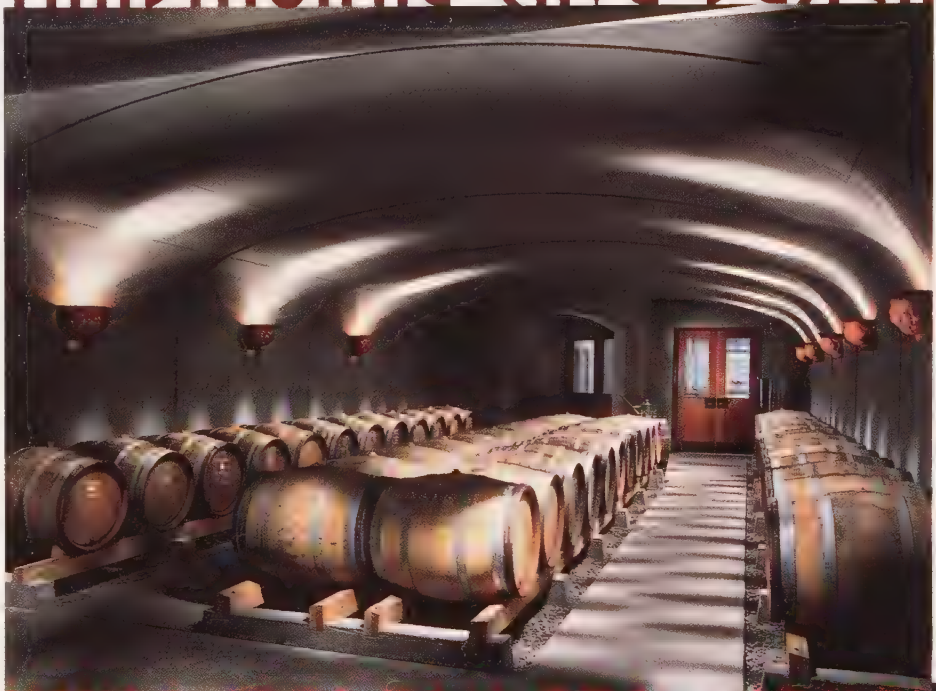


Photo above: View of north barrel room looking east, toward the tasting room alcove at base of tower.

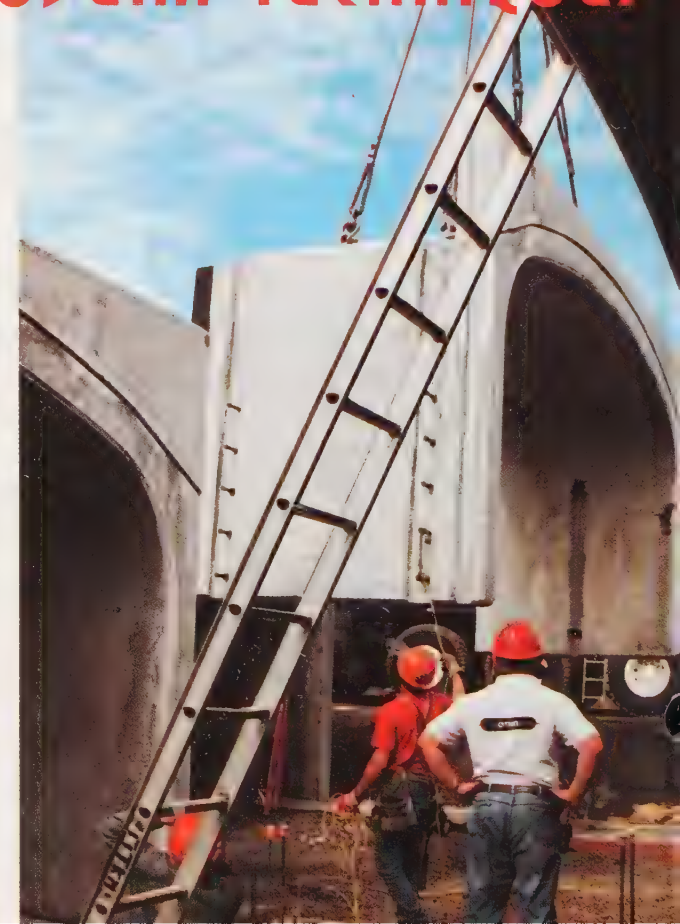
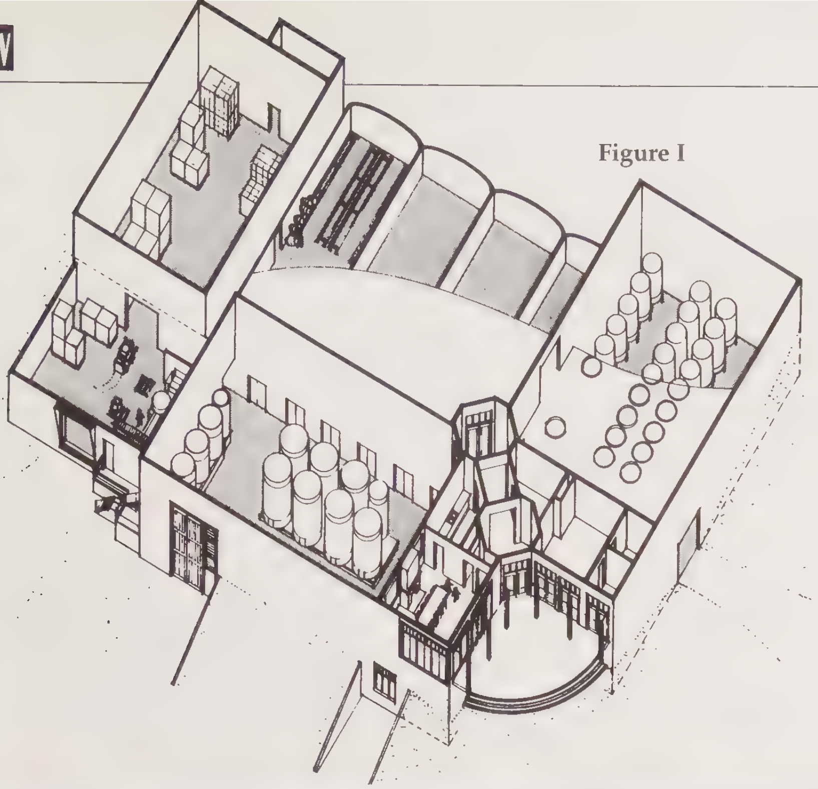
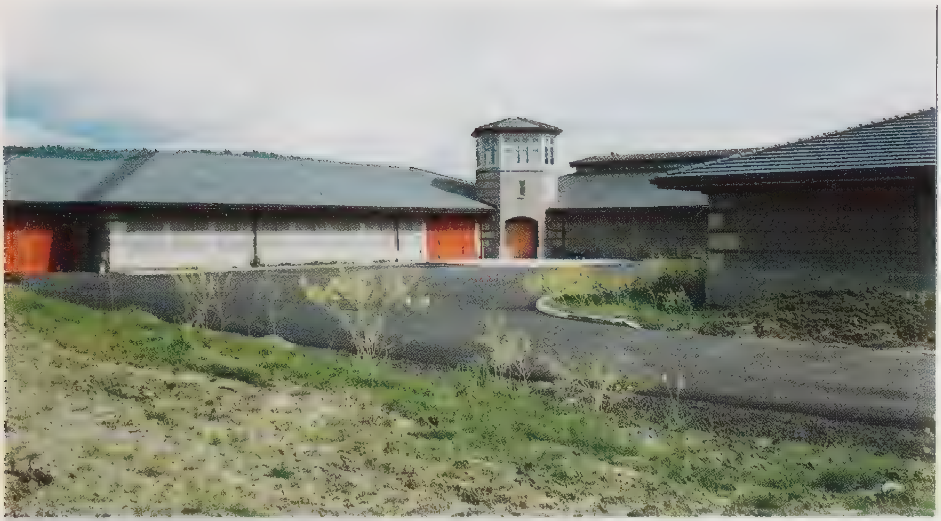


Photo right: Lowering a 20-ton pre-cast vault into place. Vertical keyways with reinforcing dowels are visible on the outside of the vault. These match up with similar keyways on the adjacent unit and were later pumped full of concrete grout.

Figure I





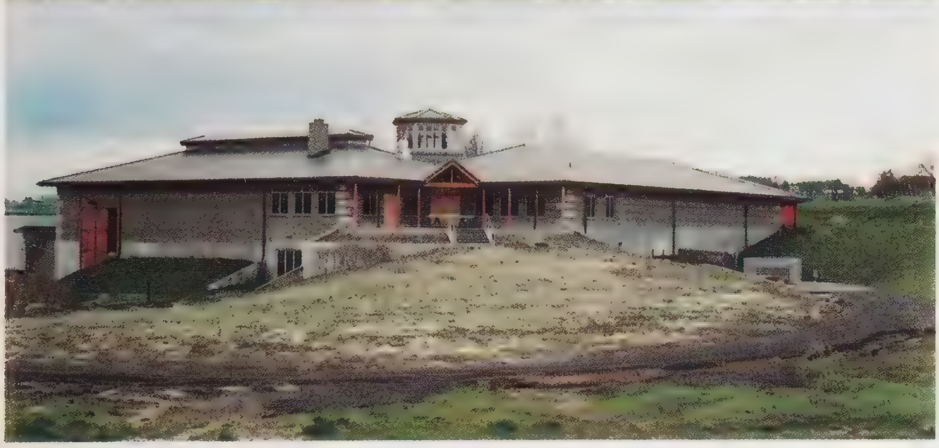


Figure 1: Isometric drawing showing "U" shape configuration and cutaway view of barrel rooms.

Middle photo: Entry courtyard with fermentation room on left; tank room in the center; and case goods storage on the right.

Bottom photo: View of dining terrace from vineyard with office to the right, dining room and kitchen to the left.

Master plan

The overall plan for the winery (fig. 1) called for a U-shaped building enclosing an entry courtyard. The northern side of the "U" houses the red fermentation room and the press room. The southern side contains the bottling line, loading docks, glass and case goods storage. The base of the "U" is the main tank room. In the center of the "U," below the entry courtyard, are four barrel rooms.

The courtyard is a staging area during harvest. Grapes arriving by truck are off-loaded in the courtyard by forklift. Whole clusters of white grapes are loaded directly into a 80hl membrane press through a large door opening from the courtyard. Red grapes can be staged out of the rain in an unheated vestibule at the west end of the fermentation room.

The red fermentation room has two wide concrete catwalks, each with a row of open-top red fermentors along each side. Fermentors vary in capacity from three to eight tons. On the upper catwalk level, red grapes are dumped onto a sorting table, built by BEI Inc. of South Haven, MI, which is equipped with a variable-speed, open-mesh conveyor belt and a high-speed blower to remove excess water. The conveyor (15 feet long and 30 inches wide) feeds directly into the destemmer which, in turn, drops destemmed grapes into a fermentor. Each step was planned within tight tolerances to minimize vertical (falling) distance and ensure the gentlest grape handling.

On the lower level, after fermentation, the wine is drained from the fermentors through a strainer, and the remaining pomace is shoveled into bins and transferred to the presses. The press room is directly adjacent to the main tank room to minimize pumping requirements. There are three presses: the 80hl press for white grapes and two smaller presses (15hl and 22hl) used primarily for red wine. When necessary, the smaller presses can serve as white presses conveniently accessed from the courtyard level by removable chutes.

On the upper level, between the tank room and press room, the winery offices and a dining room flank a garden terrace with views of the vineyards. A small tower marks the public

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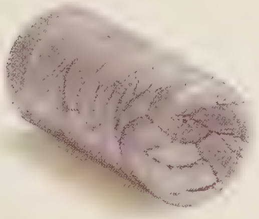
All things being equal between two bottles of wine, the difference between "magnificent" and "musty" can be all of 45 millimeters. Not coincidentally, that just happens to be the length of a SupremeCorq®.



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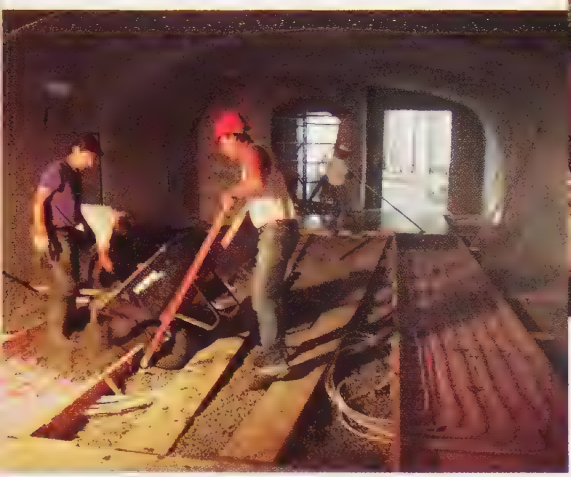


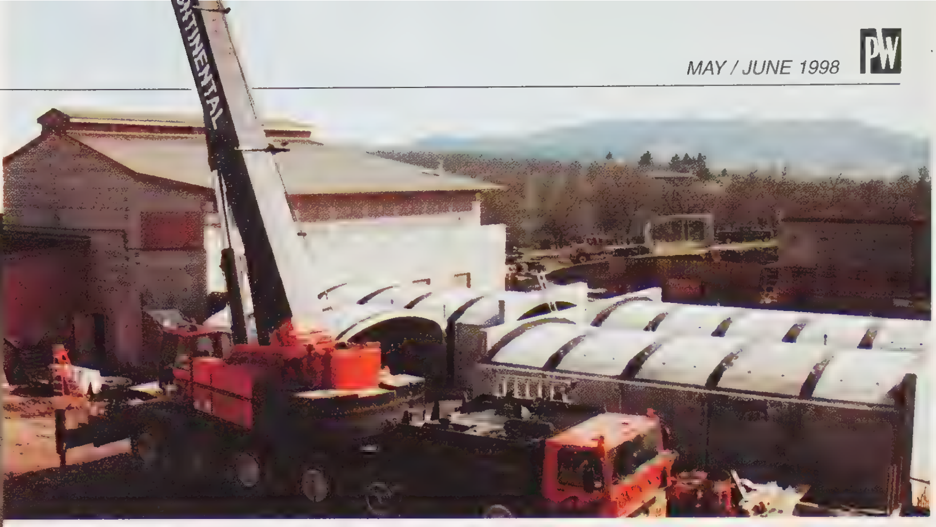


Photo left: Workers pour concrete walkways in barrel room. Heating/cooling tubes are visible in formwork.
Photo above: Crane lifts vaults into place. Approximately one-half of the vaults have been installed in this photo. Black stripes are sealant used where units come together. Phase I building is at left.

entrance. Glass block flooring in the tower allows filtered light into the tasting area below. This intimate space opens directly to the barrel rooms. Design inspiration was the exquisite tasting alcove of Domaine des Comtes Lafon in Meursault.

Phase I of the expansion included the central tank room, laboratory, and wash rooms for the harvest crew. For three years, until Phase II was completed, this structure also contained the winery's entire white wine production.

Seven openings, each five feet wide and eight feet tall, were incorporated into this tank room, ready to connect to barrel rooms planned in Phase II. Excavation for the barrel rooms began in fall 1996, as 18 newly planted acres came into production.

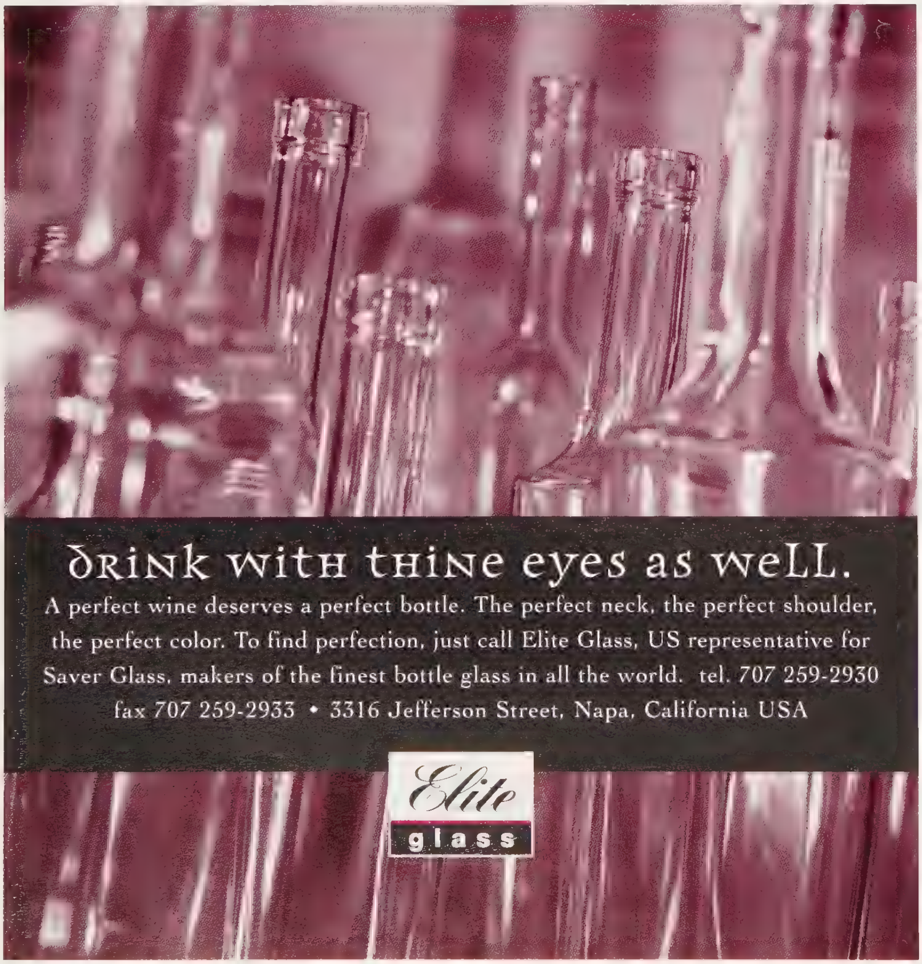
The model

Prior to refining the design of Phase II, the final, larger phase of the winery, Adelsheim decided we should revisit Burgundy, "to make sure we don't repeat the latest mistakes." An Italian side trip was included to Friuli, Trentino, and Alto Adige where white wines are produced, including the Oregon varietals: Pinot Gris (Pinot Grigio), Pinot Blanc (Pinot Bianco), and Chardonnay.

The goal in designing the Adelsheim cellar was to provide a spatial experience similar to the traditional Burgundian cellars, using cost-effective means. Traditional Burgundian caves are low, elegantly vaulted spaces constructed of stone and mortar, typically located directly under the fermentation or bottling area. Barrels are arranged in rows and stacked by hand, only two or three high.

Earthen floors, covered with gravel, help maintain humidity. Walkways between barrel rows are paved with flagstone or concrete. Since French cellars usually accommodate bottled wine and barrel storage, tasting rooms are often part of, or located adjacent to, these cellar spaces.

We were impressed with the many natural advantages of a traditional cellar. Although technology now permits precise control of temperature and humidity regardless of the enclosure, artificial climate control can be costly. Energy consumption is just one issue. Mechanical refrigeration circulates and



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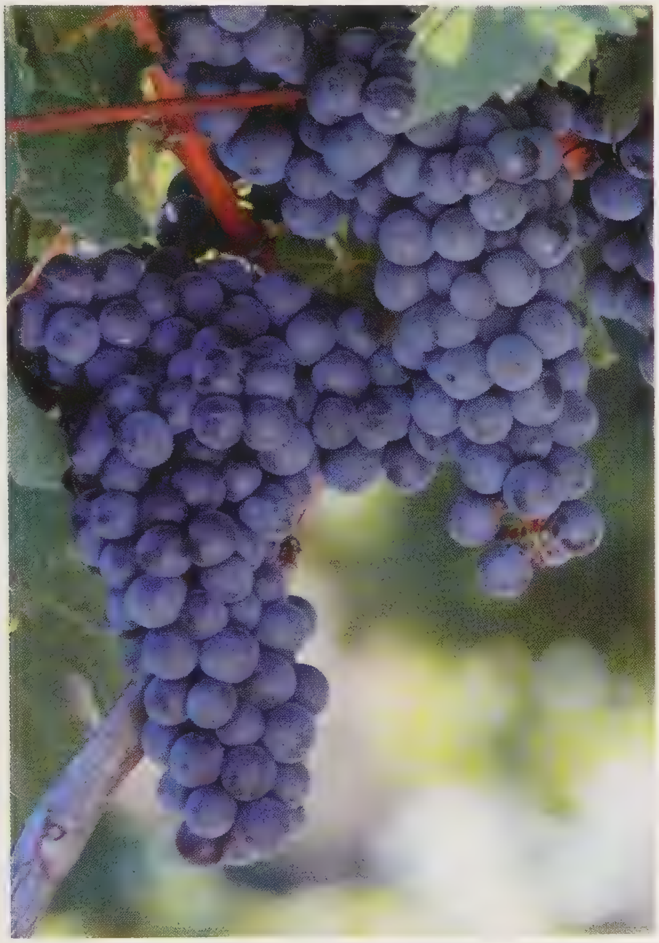

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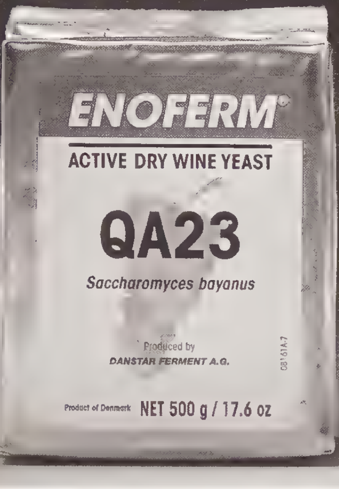

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dehumidifies air, causing evaporation of wine from barrels and requiring frequent topping.

In addition, wineries are notoriously corrosive environments. Maintenance is a constant concern, and the life span of mechanical equipment is limited. The passive, natural control of humidity, temperature, and evaporation is a strong, cost-effective argument in favor of classic cellar designs.

Drilled caves were ruled out early in the research and planning at Adelsheim because of inappropriate sub-surface rock, the expense of dealing with Oregon's high winter water table, and lack of a significantly sloped site. Several other construction techniques were considered, ranging from a Swiss tunneling system to flat pre-cast ceiling planks "dressed up" with arch-shaped room dividers.

Finally, when thumbing through a landscape architecture trade magazine, I spotted an advertisement for a pre-cast concrete bridge system capable of spanning from 12- to 42-feet with up to a 15-foot rise. This looked like just the vaulted form needed for Adelsheim. I contacted the Ohio-based CON/SPAN Bridge Systems, which has a pre-cast plant licensed to manufacture its units within 20 miles of Adelsheim's winery site. CON/SPAN has provided units for Afton Mountain Vineyards in Virginia, for El Molino Winery near St. Helena, CA, and for an underground barrel storage entry tunnel at the E&J Gallo facility in Healdsburg, CA.

Initial cost estimating by the local distributor, CSR Associated of Tualatin, OR, compared favorably with the least expensive pre-cast or cast-in-place concrete structural system under consideration ($27/sq.ft. for the vaults FOB job site).

Aesthetics aside, two main advantages of the system were immediately apparent. The vaults are impressive in their strength and have been used as airport taxiway overpasses supporting 747s. The weight of grape trucks, forklifts, and tractors would be insignificant by comparison. More important, because winery projects invariably face the "beat-the-clock to harvest" syndrome, the fact that the vaults are fabricated entirely off-site was a real plus. Site preparation, excavation, utility, and foundation work could proceed without interfering with winery activities.

Cellar design

The final cellar layout utilizes 40 of these pre-cast vaults, four rows of 10 each. Each of the four rooms accommodates 285 barrels in four rows: a double stack along each wall and two rows, three-high, down the center. In addition, each room has a 500-liter topping tank.

The pre-cast units have a 20-foot clear span; they are 10-feet high and 8-feet deep. The height allows just enough room to get a Bulldog Pup into the highest barrels.

Since these vaults are typically used for bridges and culverts and not buildings, it soon became apparent that the myriad openings needed for doors, duct work, plumbing, and electrical piping to interconnect the barrel rooms would eliminate some of the cost advantage.

In addition, the question arose of how to thermally isolate portions of the barrel rooms, when the temperature needed boosting to encourage malolactic fermentation. An ideal roll-up thermal curtain was discovered at Pojer & Sandri Winery in Italy, but the curtain amounted to an oversized window shade and would not have adequately sealed the arched opening.

The solution to both of these problems — the need for openings and for thermal isolation — was one cast-in-place flat-roofed, center cross-aisle, cutting across the middles of the four barrel rooms. The vaults on either side of this center section were designed with head walls, making the ceiling height in this section slightly higher. A roll-up thermal curtain was mounted on the side wall to isolate one-half of the cellar. In addition, this site-built portion accommodates all the miscellaneous penetrations required.

The cast-in-place center section also makes sense from a construction viewpoint. The vaults could be set from the existing building toward the center and from the end retaining wall toward the center. Any accumulated tolerances could be accommodated by adjusting the width of the cast-in-place center aisle.

The center section also conveniently contains barrel-washing facilities for each room. Winemaker Kautzner has planned an efficient routine in which each barrel is taken from its stack after racking and rolled onto a lees bucket that is set into one of two floor wells. After emptying, it is rolled onto a barrel washer set into the second well, exactly one barrel circumference away.

After washing, barrels are rolled back to their place to be re-stacked. The wells are interchangeable for either lees bucket or washer. This way, one cellar worker can continue racking while the other washes and replaces barrels. In a winery where barrels are moved by hand, this means each barrel is handled only once. The wells are covered with high-strength nylon grates when not in use.

Breaking ground

The contractor, OTKM Inc., began earth moving for the project before the rainy season in fall of 1996. Once the site was excavated to a depth of 14 feet and covered with a 12-inch layer of gravel, the design was refined. CON/SPAN engineers and local CSR pre-cast personnel worked closely with us to develop an initial prototype form. This included specific designs for lighting recesses, concealed (cast-in) conduits, and block-outs for junction box access. After the prototype was approved, CSR was able to produce one vault per day, six per week, in order to meet a tight construction schedule.

The interface between the pre-cast units and the rest of the building was coordinated with the structural engineers, Berry/Nordling Engineers Inc. To ensure that the structure would meet seismic criteria, steel plates were embedded in the retaining wall that closed the west end of the vaults and in the top of each vault. Steel angles were welded to both of these plates after the units were set, to tie the whole system together.

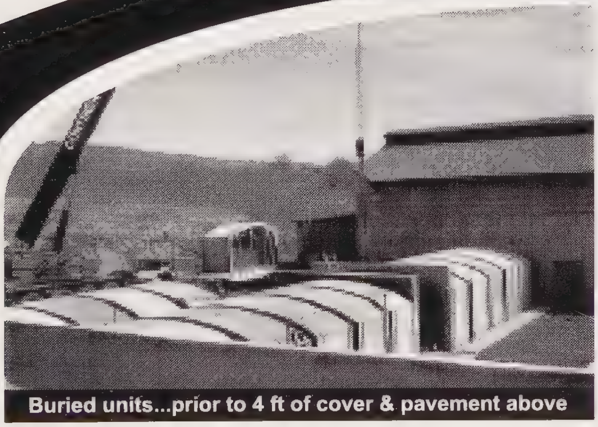
At the site, work proceeded on foundations. The legs of two vaults rest upon a common footing, approximately seven feet wide and 15 inches deep. A wide slot or keyway runs down the middle of each footing. Plastic shims were used to set the vaults plumb and level in this keyway, then cement grout was poured to permanently set them in place. The top portion of footings, which protrude up into the barrel room gravel floor, was sloped to assure drainage. The first vault arrived by truck at 7AM on a Monday morning. By noon the following day, all 40 vaults had been set in place with their joints sealed.

Concrete grout was required between parallel units to increase the resistance to earthquake forces. Understandably, the contractor attempted to pour both keyway and wall grout at the same time but soon discovered that the vibrator used to distribute the grout was capable of moving the 20-ton vault several inches out of position. The foundation keyway had to be grouted first, before the upper vertical gap between the cells.

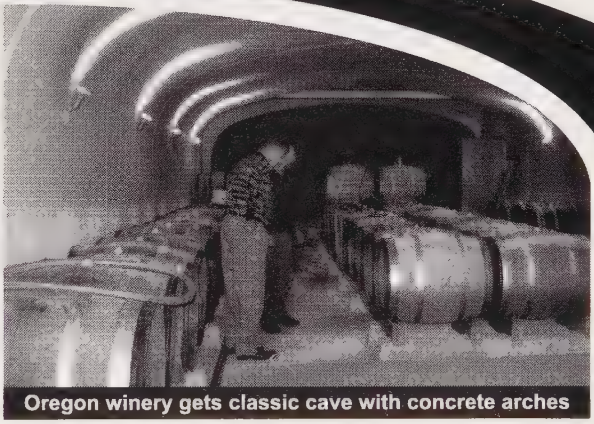
SPECIFIC DESIGN ISSUES

Structural

In a typical bridge or tunnel installation, the outside legs of the units are restrained by soil as they are buried



Buried units...prior to 4 ft of cover & pavement above



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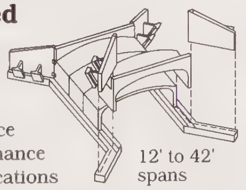

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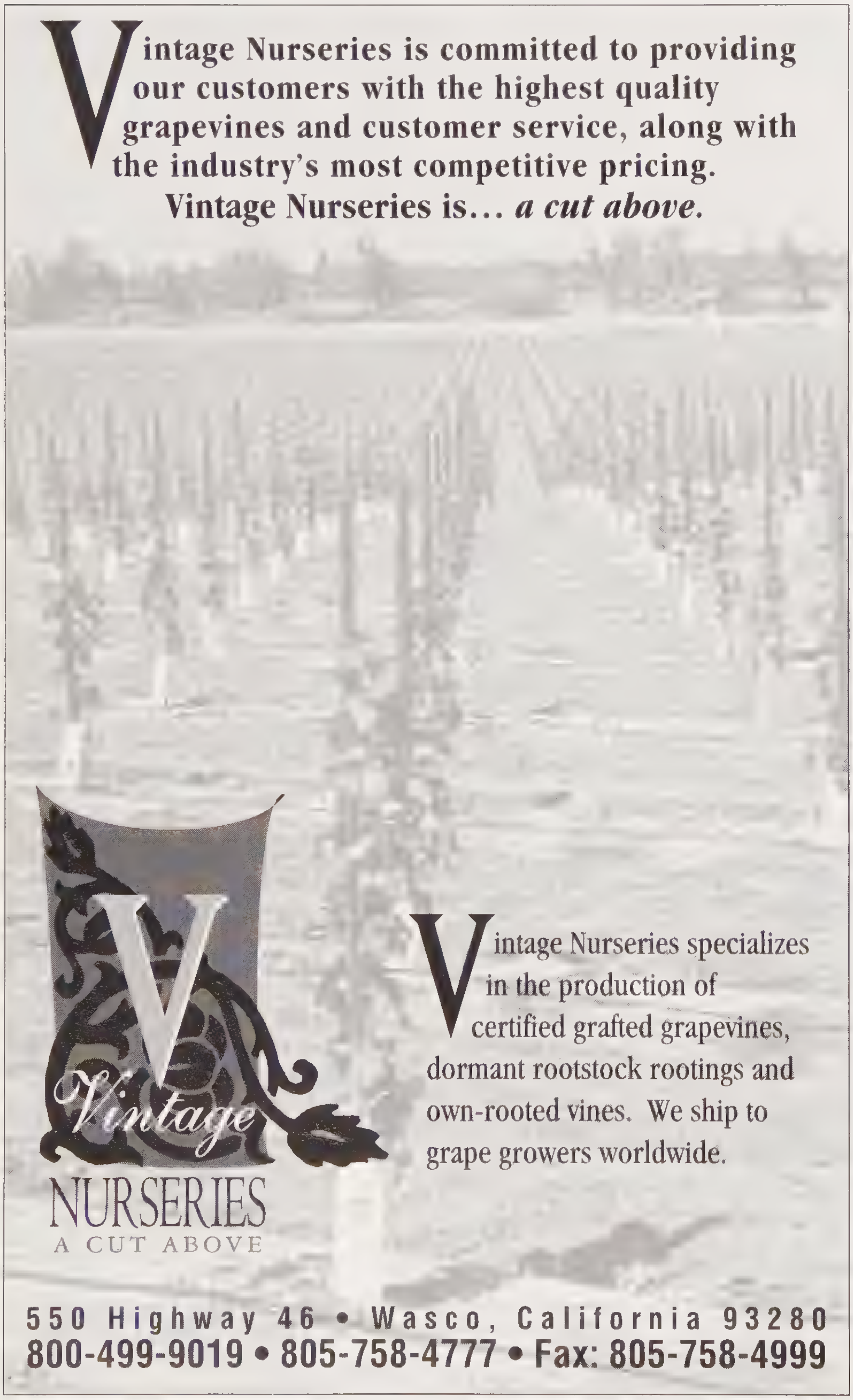
along their entire length. But the goal at Adelsheim was to make the outer legs of the vaults do double duty, serving as the lower wall of the adjacent fermentation and case-good spaces.

The engineers were further challenged to design the upper walls of the two major spaces to bear directly on the outer legs of the vaults. Extra reinforcing steel was needed, but this was a less expensive and more efficient solution than building a separate two-story wall for each space. Special attention to the connection was required where the upper level wall actually rests on the vaults. CSR fabricated the outside vaults with special keyways to accept the upper portion of wall. Threaded dowels were also employed to help transfer the lateral (seismic) loading.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Drainage

Because rows of vaults were installed side-by-side, drainage of the valleys between rows became a critical design issue. The solution was to pour lightweight concrete "crickets," sloped to direct the water to drains and then pipe it down a five-inch gap between cells. Courtyard drainage was directed to catch-basins and piped between vaults and through footings to the storm water detention pond.

The plumbing contractor had all of the pipes stubbed out above the final ground level. When the vaults arrived, they were simply set around the vertical pipes, which were later trimmed to the appropriate height.

To facilitate drainage of groundwater, spilled wine, or wash water, the design called for sloping the sub-soil beneath each barrel room and funneling runoff to a central drain. In reality, the "mudstone" beneath the site could not be adequately shaped. The alternative devised with the soils engineer was to line the excavation with filter fabric extending right up to the footings and then to compact crushed rock into the same funnel shape.

Mechanical Systems

Cellar floors are gravel in a typical Burgundian cave. From the early conceptual stage of this project, the use of in-slab heating in the concrete walkways was considered to minimize air circulation and evaporation.

The architect for the new Hospice de Beaune cellars in Burgundy suggested that Adelsheim cool the cellar by connecting the in-floor heating tubes to the process cold water system. Although cooling from the ground up is not fast or efficient, in the cellar, quick temperature changes are not important or desirable. The system is supplied by the same chiller as the process heating and cooling.

Since fermentors are typically used only four to six weeks each year, the chiller could be put to use when it's normally not in service. All of the exterior piping was insulated, and a small space heater was installed in the chiller equipment room to avoid frozen pipes.

Condensation was also a concern in this carefully controlled, humid area. To prevent moisture dripping from the ceiling, two layers of rigid insulation were placed above the cellar and below the soil. The insulation conformed to the curved surface of the vaults. A special high-density layer was used over the center, flat-roof section where there was less soil cover to distribute the weight of vehicles above.

Final touches

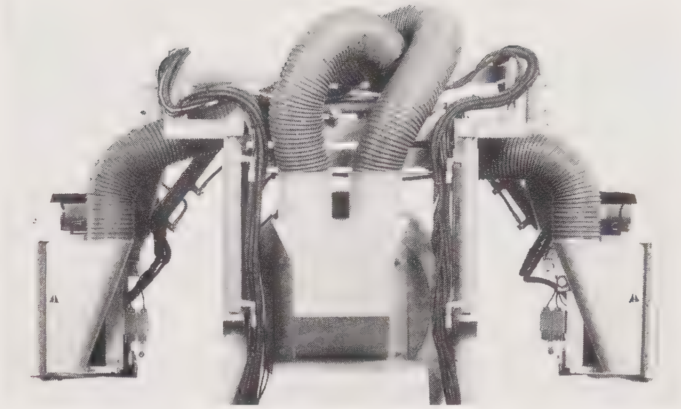
Because the vaults were produced in the controlled environment of a pre-cast plant, their interior surface is quite consistent. However, to smooth patches over lift holes and help unify the pre-cast vaults with the cast-in-place sections, a surface polymer coating was applied by spray gun when all concrete work was completed.

Finally, considerable attention was given to lighting; several visits were made to the pre-cast yard to try out mock-ups. Adequate lighting was desired for cellar work and appropriate mood lighting for barrel tasting with clients. The solution was inexpensive, high-output, industrial spotlights, U.L. listed for wet locations. These are positioned high to wash the arched ceiling with light and are covered with custom terra cotta sconces designed and built by Ginny Adelsheim and her sister, Corinna Campbell of Fondo Terra Cotta. The lighting is controlled with dimmer switches.

Architect's postscript

As a designer, my intent from start to finish with this project was to address practical and aesthetic issues for a structure that enhanced the art of winemaking for David Adelsheim, his winemaker, and cellar staff. I rediscovered that classic solutions are simply that — those that have withstood the test of time. As a team, we were able to see how adaptations of these forms, techniques, and materials can work well for a modern winery. ■

Laurence Ferar is the principal architect and landscape architect with Laurence Ferar and Associates, a Portland, OR, firm established in 1983 specializing in winery design. Phone: 503/241-5447.



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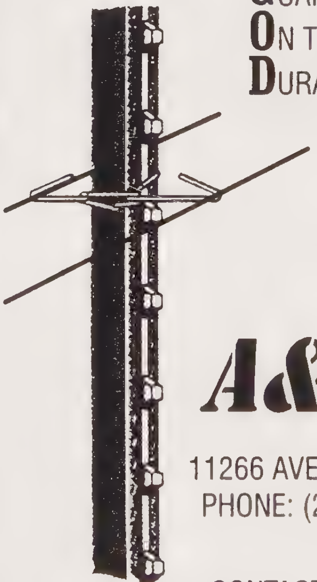

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CARNEROS CREEK WINERY

Pinot Noir pioneer

by Paul Franson

If any one person could take credit for the popularity of the Carneros region and the increasing acceptance of California Pinot Noirs, it might be Francis Mahoney. Mahoney's Carneros Creek Winery, which is celebrating its 25th anniversary this year, has had significant influence in developing the region, both because of its excellent wines, and because Mahoney spearheaded the Carneros Quality Alliance to promote the area's unique climate and soil. In addition, Mahoney funded and conducted research to identify ideal Pinot Noir clones for Carneros Creek and optimum growing conditions for the finicky grapes.

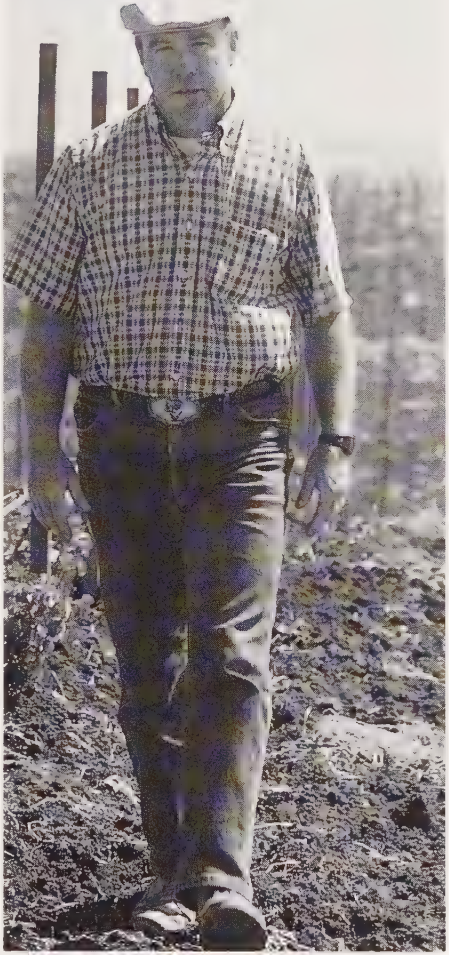
Mahoney had little intention of becoming so influential when he started his winery. He just wanted to make great Pinot Noirs — Pinot Noirs that could match the best made in Burgundy.

As a young man in the wine importing business, Mahoney developed a taste for fine Burgundy. He wondered why California, which was making excellent Cabernet Sauvignons even then, couldn't seem to produce good Pinot Noirs. He set out to change that situation.

The quest wasn't easy, but he has succeeded. While Mahoney discourages direct comparisons with Burgundian wines, his wines have been confused with them in blind tastings. That's not his goal, however.

Carneros Creek today

Today, Carneros Creek is riding the crest of interest in lighter red wines, notably alternatives to Cabernet Sauvignon. The winery has grown to produce 35,000 cases annually, primarily Pinot Noir, and will increase to 75,000 cases over the next six years. To do this, Carneros Creek Winery is adding 18,000 square feet to the winery begun 25 years ago. Construction should be completed by spring 1999.


Francis Mahoney, Carneros Creek Winery

The winery recently purchased 110 acres and planted 40 acres in Pinot Noir. Eventually, about 90% of the winery's 184 acres will be in carefully selected clones of Pinot Noir.

The winery will be adding 28 closed top fermentation tanks (3,400 to 5,700-gallon capacity), a large number for a winery producing so few wines. They're needed since the winery ferments and ages different clonal selections separately, to allow Mahoney and winemaker Melissa Moravec to blend to create separate bottlings.

Intensive research

Many wineries conduct research to improve their wines, but few have devoted as many resources as Mahoney has out of his determination to produce the quality of wines he wanted to make.

"When we started out in the early 1970s, people wanted robust wines that aged well," he says. At that time, few wineries were even trying to make premium Pinot Noirs. The wines they produced were made from virus-infected vines that kept the grapes from reaching their potential. "UC Davis conducted research to improve the vines, but its focus was on quantity, not quality. They wanted to develop good, clean vines they could supply to commercial nurseries. The emphasis was on virus-free vines, not superb wines."

The University was successful, and Pinot Noir production grew rapidly. In the process, quality was compromised, producing grapes that were much like rugged supermarket tomatoes with little taste.

Mahoney wasn't satisfied with these results. "I came along with a background in imported wine, and I thought the California Pinot Noirs were a little weak on flavor and texture." He set out to understand and improve the situation.

Mahoney started in the wine business with Connoisseur Wine Imports in San Francisco in 1969. He resurrected an old winemaking license and crushed his first grapes in 1971 under the Connoisseur Winery label.

The big year for Mahoney and his wife and co-owner Kathleen was 1973. That year, they renamed Connoisseur Winery, relocated it to to the present site in the rolling hills in Carneros, and began construction for Carneros Creek Winery. The first wine was a 1972 York Creek Napa Gamay, and the winery's first Zinfandel, Chardonnay, and Pinot Noir were crushed that year.

The next year, Mahoney planted nine acres of Pinot Noir. He also began a joint study with UC Davis to improve the quality of Pinot Noir wines. His winery contributed $100,000 to the study over the next 10 years, an unheard of amount at the time. The research actually continued until 1986, 12 years total.

The reason for the research was that Pinot Noir had a history of producing thin, weak-flavored wines that aged

CARNEROS
CREEK

very rapidly and turned reddish brown, very unlike Pinot Noirs of Burgundy. The study was intended to identify the optimum Pinot Noir clones, then find the best way to grow them. As part of the research, the winery planted 1.75 acres with 20 clones that had a history of producing good wine.

Some of the clones were directly from Burgundy, while others were holdovers from scattered pre-Prohibition vineyards. Some came from backyard plantings that had survived Prohibition and pestilence. Some were from the fallow research station in Jackson, CA, some from the old Paul Masson Vineyards above Saratoga, others from the Chalone Estate and Hanzell. "We scoured the land to find good selections," recalls Mahoney. "We identified vines in specific vineyards over a two-year period to observe and insure that we had a good representation of the specific clone."

No one is sure whether any of these clones are the same ones used to make celebrated wines in Burgundy. That's a project awaiting a future PhD candidate at UC Davis, but Mahoney points out, "All these vines come from Europe, and if someone were collecting wood, he'd be more likely to try to get Romanee-Conti or Chambertin than some unknown producer!" He adds, "We know it's all Pinot Noir, however. The distinctive leaves prove that."

Carneros Creek planted the vines under conditions as identical as possible. The grapes were kept separate, and careful records of brush weights and cluster characteristics maintained. Each year, the winery and the university vinified small, five- to 50-gallon lots, and organized tasting panels to evaluate the results.

In search of the perfect Pinot Noir clone, Carneros Creek winemaker Melissa Moravec and owner Francis Mahoney participated in a 12-year study in which Pinot Noir clonal samples were fermented and aged separately (c. 1980s).

Mahoney was looking for one, or possibly two clones that would provide superior wine. What he found, however, were seven clones with distinct but attractive personalities and flavor; clones that had typicity to carry these personality characteristics forward from year to year, vineyard to vineyard.

He took these seven selections and planted them throughout the vineyard in different growing conditions. He found that all the clones performed consistently unless they were planted in very shallow or very deep soil. "This tended to refute the romantic notion that changing the site changes the characteristics of the wine," he notes.

In 1986, the winery planted 10 acres of a mix of the clones, then in 1990, 45 acres more. Most of the current wine production comes from these hillside plantings near the winery. These vines exhibit greater intensity because of the hillside planting, making them ideal for the wines Mahoney likes and produces.

The research wasn't limited to clonal selection, however. It also focused on yield in various growing conditions. One thing Mahoney discovered was that ton-per-acre (TPA) figures were meaningless for Pinot Noir. "TPA has nothing to do with wine quality," he says. "What's important is pounds per vine. Each clone has a genetic statement of yield for each bud. Some do their best at six pounds, others at 12 to 14 pounds per vine."

To exploit this finding, Carneros Creek matches the clones to the soil, planting low-yielding vines in shallow, light soils. "We found that if we put high-yielding plants in light soil, it would cause excessive stress, so we'd have to spend a lot of time on maintenance. It's far better to custom fit the vine to the soil. We match them and leave them alone."

At present, the winery uses nine clones, including six from its early research. It matches them to the varying conditions in the vineyard, from shallow, rocky hillsides to deep alluvial soil close to the creek. The vines are in five- to six-acre blocks, however, they don't show marked difference until the grapes start maturing in August. Wine from each block is kept separate through fermentation and ageing.

Matching vines to the soil

Carneros Creek's growing practices are relatively consistent, though trellising depends on which type is optimum for the particular clone. Mahoney plants the vines very closely (3x9 and 4.5x9) to produce maximum quality with reasonable yields. The winery uses cane pruning in 80% of the vineyards, and although Mahoney realizes this is somewhat controversial, he finds that with cane pruning, the fruit set seems more consistent. "You see more highs and lows with cordon pruning, and we want to avoid the peaks and valleys."

For moderate-producing vines, a five-wire vertical trellis is used with one fruiting wire and two pairs of catch wires. "We could go with a very open system, but that takes a lot of space. It is not necessary to go with a more open system because vine growth is not excessive or out of balance."

Rootstock choices are driven by specific soil conditions. "In deep alluvial soil, we use 3309, 101-14 or 5C, which can handle the wet spring, while on hill tops, which are mostly rock and shale, we have 110R, 140R, 1103, or St. George." The majority of the winery's producing vines are now six years old, after recent replanting to deal with phylloxera.

The Carneros Quality Alliance

Hearing wineries all over Napa and Sonoma tout their Carneros Chardonnays and Pinot Noirs, it's difficult to remember that little more than a decade ago, Carneros was almost unknown to the wine-buying public. Though vines were planted there before Prohibition, they were long gone when Louis Martini and Andre Tchelistcheff planted vineyards there in the 1930s. Other plantings followed, including those of Carneros Creek in 1972.

The Bureau of Alcohol, Tobacco & Firearms granted an appellation designation to Los Carneros in 1983, and two years later, Francis Mahoney of Carneros Creek helped form the Carneros Quality Alliance (CQA) to promote the region's wines. Even wineries not located in Carneros are members of the alliance. Beaulieu Vineyards and Robert Mondavi Winery, for example, promote their Carneros wines and belong to the CQA.

The Carneros appellation, which lies in climate Region I, extends across southern Napa and Sonoma counties where the climate is moderated by nearby San Pablo and San Francisco Bays. It enjoys maximum summer temperatures six degrees cooler than up Napa Valley, and winters six degrees warmer.

There are clear differences between Carneros wines and others from nearby growing areas. "The typical Napa Valley Chardonnay is big and mouth-filling," states Mahoney, "whereas the Carneros expression is a statement of fruit with a good clean finish in the aftertaste with an acid wash."

The CQA continues to promote the region, but its goal seems to have been met. Winemakers and consumers recognize the virtues of the Carneros region, and wines made from Carneros grapes fetch premium prices. ■

Carneros Creek uses drip irrigation. "People in other areas may disparage irrigation, but they don't live where it doesn't rain from April to September," Mahoney says, adding that irrigation also allows more uniform planting.

Pick by taste, not by numbers

Mahoney and winemaker Moravec pick grapes based on flavor rather than depending solely on measurements of sugar, pH, and acid. "You have to match the sugar level with the taste of the grape," he says. "You need to wait for the flavors to develop."

The winery typically picks grapes in the high 23° Brix range, with 23.5° minimum to 24° maximum, sometimes a little higher. "Sugar can rise dramatically in a very short time in dry soil," he notes. "We might start picking at 23.1°, and by the time we've picked the block, it might be at 24.3°."

Carneros Creek wine definitely is in the California style, with higher alcohol compared to wine from other premium Pinot Noir regions. "In Burgundy or Oregon, in an average year, they might get 21° to 22°, but that would be very green here." He's found that his grapes can be underripe even as high as 23°. "They can have green stems and seeds and taste green, but wait a few days. A little brown starts showing up on the stems and seeds, and you start getting a little flavor like jam. It's easy to go over the top, though, so we have to be careful." Typical range of readings at picking are 23° to 24.3°, with a pH of 3.35 to 3.5, and a TA of 0.78 to 0.95.

Not surprisingly, the different clones exhibit different ripening patterns. "One presents good flavors at 22.2°, while another needs to hit high 23° to have the right jammy character. Experience tells us when the wine will be good."

Winemaking evolved from the beginning

Over the years, Mahoney has also experimented with winemaking processes. He originally adhered closely to traditional Burgundian practices like open fermentors and punching down the cap instead of pumping over. With time, however, he realized that many of the revered if quirky practices in Burgundy are simply tradition and have little effect on wine quality.

"Many Burgundy producers are very small, three to four hectares (about 12 acres). We'd seem like Gallo to them. As a result, they may not have the resources to buy closed fermentation tanks or other modern equipment, but we're not necessarily claiming that those are better." He finds no significant difference fermenting in closed tanks compared to open top, but he says that some years, he might choose to use the open vats to blow off excessive alcohol. It depends on conditions. "Pinot Noir grapes just look good in an open top fermentor. It is a personal choice. If money were no object, I'd have open tops for aesthetics, but I'm not sure it makes a difference."

Carneros Creek uses an unusual 25-year-old custom destemmer without rollers. It gently destems the grapes, splitting some grapes open by centrifugal force while others only have small openings where the stems were removed. This leads to partial whole-berry fermentation, and Mahoney believes this process contributes significantly to the winery's style. "We've found that the destemmer has a big impact on winery style, a style that's very cherry and strawberry in character and very recognizable. It's very bright with clean fruit."

Fermentation temperatures peak in the 90°F range. The winery takes advantage of the usually cool weather in the region to prolong fermentation. "We start at the typical vineyard temperature of about 65°F and allow the grapes to soak without yeast inoculation for 24 hours." Sulfur is not added when destemming if the grapes are in good shape, as they usually are.

Different cultured and natural yeasts have been experimented with, but Mahoney sees little difference between them in the red wines, though he's noticed an H_2S problem with Montrachet. Carneros Creek's primary yeast now is Pasteur Rouge. With whites, Mahoney has found the variety of yeast used is more important.

Pinot Noir fermentation takes nine to 14 days, and the winery presses the grapes when they are reasonably close to dryness. Malolactic fermentation often occurs spontaneously, since no sulfur is usually added, but if not, the winery rarely inoculates. After a week or so in a tank to settle, the wine is racked off the gross lees and put in barrel. Malolactic is usually complete by late November.

Barrel selection

Along with clonal selection, growing conditions, and fermentation, Mahoney believes barrels contribute significantly to the unique character of Carneros Creek wines. The winery uses both large vats and barrels from a number of different coopers in France.

"Barrel producers have their own philosophies about how to make barrels, too, and that can have a big impact on the wine," he notes. "What is medium toast to one, for example, can be heavy or light to another cooper. Origin of wood is also an important factor. Having many cooper-suppliers is very elemental in adjusting and finishing the wines."

Carneros Creek uses only French oak and keeps the barrels no longer than five years. The Estate and Signature wines are barreled down by November and undergo nine to 10 months of ageing. The lighter Fleur de Carneros, which is produced from specific clones that produce bright, fresh fruit, undergoes the same fermentation as the other wines, but because it has less tannin and flavors, "It would be overwhelmed by new French oak," he says. So this wine ages in large (1,700 to 2,700-gal) oak uprights.

A key to Carneros Creek's style is blending. Mahoney clearly has definite ideas about what he wants to produce, and he and Moravec blend different clones to achieve each style. The clones differ significantly in color, fruitiness, and other flavors, but fortunately they are predictable from year to year, simplifying the task of producing consistent wines with distinct personalities.

White Burgundian varietals, too

Though most of Carneros Creek's production is Pinot Noir, it also produces Chardonnay. This was a natural step for Mahoney, who loves Burgundian wines, and as with the red wines, the white wines reflect both traditional tastes and his own growing conditions and style.

Chardonnay grapes grown in Carneros have very different characteristics from those grown in upper Napa Valley. The acid is more pronounced, and the flavors reflect more citrus than the melon of warmer growing areas. Even with the cooler conditions of Carneros, however, Mahoney feels his Chardonnays are more like white Burgundy.

Mahoney regards traditional California Chardonnays as wines most suitable for sipping alone rather than paired with food. He strives for a wine that goes with food, one that cleanses the palate rather than dominating it. "Our Chardonnay is driven by the Old World concept of a food wine," he says. "In Burgundy, there's some oak present, but it doesn't dominate the wine." His wines reflect this tradition.

Meeting the goal

The Mahoneys' Carneros Creek Winery has clearly succeeded in the quest Francis Mahoney undertook 25 years ago — to make excellent Pinot Noirs in California. His goal was to make wines equal to those great Burgundies he enjoyed, and though he's done that, he admits that he no longer tries to make a "California Burgundy."

"We — as well as Burgundy and Oregon — all make good Pinot Noir, but we make it completely differently. We're making our greatest expression of Pinot Noir after 25 years but stylistically, Burgundy and Carneros wines are different. Neither region can do what the other can, but both can produce great wines."

Few would disagree. Mahoney has helped raise California Pinot Noir from mediocrity to greatness. In the process, he's helped Carneros wines become the standard by which California Pinot Noirs are judged. ■

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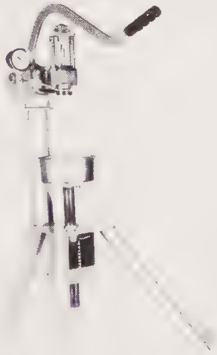

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Is it really SYRAH?

by Alex Sas,
The Australian Wine Research Institute

Is your Syrah vineyard really Syrah, or could it be a mixture of rogue varieties? This is the question South African grapegrowers are asking after an article in the national wine industry magazine, *Wynboer*, suggested that some of their so-called Syrah plantings may be Durif.

Such confusion is not new, nor is it restricted to South Africa. Closer to home, readers may recall the report by Dr. Carole Meredith of UC Davis (***PWV*** March/April 1996) who conclusively proved that "Petite Sirah" is actually more than one variety. The name "Petite Sirah" is used in California to describe both Durif and Peloursin.

Dr. Meredith was able to make this discovery using DNA profiling, and it is this technology that the South Africans will probably use to solve their own case of mistaken identity.

DNA is a molecule that is found in the cells of every living organism. It stores all the coded information that determines what a plant or animal looks like and how it functions. A DNA profile produces a genetic fingerprint, and these "fingerprints" can be compared with a high level of precision, which explains their routine use by such groups as law enforcement officers and medical researchers.

Traditionally, grapevine identification has relied only on the skills of ampelographers — those people who can identify a variety by its appearance alone. But even an ampelographer can find it difficult to tell two different varieties apart at first inspection. Sometimes the unknown grapevines must be grown under the same conditions and observed for several years before they can be correctly identified. The ampelographer's task is made even more difficult by the fact that over 24,000 variety names exist, but there are probably only 5,000 genuine grapevine varieties.

The DNA fingerprinting technique widely used by international grapevine researchers was pioneered by doctors Mark Thomas and Nigel Scott and col-

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To obtain sampling kits, contact The Australian Wine Research Institute (AWRI) or E T S Laboratories. E T S will act as the U.S. consolidator making a monthly shipment of samples to AWRI. Samples will be processed only if they arrive in bags supplied with sampling kits.

For further information and fees contact either AWRI or E T S.

Sue Weeks
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Gordon Burns
E T S Laboratories
Tel: 707 963 4806 Fax: 707 963 1054
gburns@etslabs.com

The Australian Wine Research Institute uses a method and database developed by the CSIRO Division of Horticulture, in collaboration with the CRC for Viticulture, and with support from the Dried Fruits Research and Development Council, the Grape and Wine Research and Development Corporation, and the Department of Industry Science and Technology.

leagues at Australia's Commonwealth Science & Industrial Research Organization (CSIRO). It is a very powerful investigative tool, used mainly by scientists in areas such as gene mapping, population genetics, and determining parentage.

For example, doctors Carole Meredith and John Bowers were recently able to demonstrate that the parents of Cabernet Sauvignon were none other than Cabernet Franc and Sauvignon Blanc.

Now grapegrowers and winemakers have direct access to a DNA profiling service. The CSIRO has passed the DNA fingerprinting technology on to The Australian Wine Research Institute. The institute offers the service to the world on a commercial basis and has already tested many samples submitted not only by grapegrowers and winemakers from the U.S., but from clients in South Africa, New Zealand, the United Kingdom, Israel, Malta, and Australia.

In the accurate and reliable test, DNA is extracted from unidentified plant material and analyzed by a semi-automated process. The results obtained are objectively compared with a computerized database of the results of the same tests performed on reference vines. The reference material was sourced from variety collections held by the CSIRO and the South Australian Research & Development Institute in Australia and from international collections. These reference vines have been independently verified by ampelographers.

Practically any part of the grapevine can be tested, even roots, but young green shoot material is preferred. The test does not distinguish between clones of individual varieties, and it can't be applied to wine. In Australia, some wineries want to use the DNA profiling service to verify the identity of their vineyards in order to produce an audit trail from vineyard to wine. This audit trail would form part of their quality management system, which is required by some wine buyers in overseas markets.

DNA profiling is an objective means of sorting out errors in grapevine identification and gives the grapegrower confidence in the identity of varieties in the vineyard. It gives the winemaker the assurance that a bottle labeled 100% Syrah is definitely that. ■

For more information or to use this service, contact Gordon Burns at E T S Laboratories in St. Helena, CA, on tel: 707/963-4806, fax: 707/963-1054 or email: gburns@etslabs.com or Sue Weeks at The Australian Wine Research Institute on tel: +61 8 8303 6600; fax: +61 8 8303 6621 or email sweeks@awri.adelaide.edu.au.

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MAKE 'EM LAUGH – WINE MARKETING IN THE LIVERMORE VALLEY

by Carol Caldwell-Ewart

Until they had read *Cooking a Honker*, many recent visitors say they had never given much thought to the Livermore Valley wine country east of San Francisco Bay. "Now people come into the tasting room and say 'I read about you,'" says Fran Replogle, co-owner of Fenestra Winery, and chair of the committee that created the cookbook. "It gives people a sense that they know the people in the Livermore Valley."

Visitors are determined to stop by and meet the folks they read about in this fun and funny cookbook with the great recipes, and that's just the result the members of the Livermore Valley Winegrowers Association (LVWA) were hoping for when they produced it.

Though it's an excellent cookbook, *Cooking a Honker* is much more. It's part tour guide, part historian, and 100% comedian. The full title — *Cooking a Honker, Charring a Cheesecake…and Other Kitchen Tales from the Livermore Valley Wine Country!* — captures the book's friendly tone of not taking itself too seriously. Recipes from the Livermore Valley's wineries are punctuated with stories about kitchen or hospitality disasters, quotes, tidbits of winery or local history, and photos, labels, and lively illustrations

"The book gives you a view behind the scenes that people don't usually get to see," explains Nancy Mueller, of Wente Vineyards, who conceived the idea and edited the book. "In the hospitality industry, the event may look seamless, but behind the scenes, the view can be just hilarious. It shows that we're all human."

Mueller cites favorite disaster stories from the book to illustrate her point. Elliston Vineyards' near disaster catches every reader's eye. As the winery prepared for a spring wedding with wild flowers and greenery gathered from the grounds, a server pointed out that many of the leaves were poison oak. The new chef, staff, and an early guest refuted this botanical identification, and one even rubbed a leaf on his face to prove it. Fortunately, the fact they were wrong soon became clear, and there was still time to redecorate the tables before the bride and groom arrived.

Jim Concannon tells the book's title tale. A hunter, he brought home a large Canadian Honker for his new bride Helen to prepare. But not even her best efforts could make the tough goose edible. After researching the life of a honker, Concannon realized the bird was probably about 20 years old and a challenge too tough for any chef.

Such tales are not the sophisticated stuff found in most wine industry cookbooks. In fact, the original plan had been to develop a very elegant series of books called *Perfect Pairs*, but that plan was abandoned in favor of a book that is truer to the flavor of the personalities of the Livermore Valley vintners and growers. "It makes the wine region come alive," points out Replogle.

"We took a lot of heat, before and after the book was published," admits Mueller. "A lot of people asked, 'Is this really how we want to be viewed?' But we made the right choice. Ninety percent of people love it; it really stands out on the shelf; and many people say it's the first cookbook they've read cover to cover."

"We took a bit of a gamble, coming up with this unconventional concept," concurs Michael Perry, executive director of the LVWA. "It's a different way to go about regional marketing, and I've been very happy with it."

The process of creating *Cooking a Honker* took about four years. "It puttered along at first, and didn't have a real focus," says Replogle. Then in the last year, the push was on. "Mike Miller joined the committee and gave us a whole new way of looking at the cookbook. About six months before we published, we changed the whole concept — the title, focus, and design of the book. That was in July, and we had to have the book by December 7 for a well-publicized event. We were determined to make the date."

The committee sent out a questionnaire that asked LVWA-member wineries to submit stories about their worst entertaining disasters, family traditions, the funniest or wildest event, and strange animal stories from the winery, as well as their recipes. Though not all the topics were used in the book, they gave the committee plenty of good material to choose from.

"When we looked at recipes, we looked for ones that were interesting as well as good," Replogle explains. "We looked for ease of preparation and ingredients that you can actually find."

Linda Carucci of Linda Carucci's Kitchen, a cooking school in Oakland, edited the recipes and made sure that each one conformed to a uniform style. She was formerly dean of students at the California Culinary Academy.

LVWA printed 5,000 copies of *Cooking a Honker*, and the cost of printing and design was $15,000. The book retails for $14.95. The committee of Replogle, Mueller, and Michael Miller from Brown-Miller Communications gathered, wrote, and edited the stories and recipes, and tested the recipes as well. Brown-Miller prepared the marketing plan in advance.

Before the book was printed, the valley wineries signed contracts to buy the books to sell in their tasting rooms. Local book stores, visitor associations, relocation companies, and Friends of the Vineyards (a group dedicated to maintaining agriculture in the Livermore Valley) pledged to sell the book once it was published. These advance sales covered the production expenses.

The LVWA had several motivations to do the cookbook. "We needed another source of funding for the organization," says Mueller. "We wanted to get our name out in the public eye and to get the facts out about the Livermore Valley in a fun way. Many people don't realize how long the Livermore Valley has produced wine."

The book was launched December 7, 1996, and by March 1998, all but 2,000 had sold. "We exceeded what we expected in income, because the book sold so much faster than we expected," Mueller reveals. She's delighted that, as a result, "people really see the Livermore Valley as a viable wine region with great wines, as a destination."

"Our members are very, very pleased with the attention the book has brought our organization. Bookstores are getting positive feedback, and it's reached the goals we set for it," says Perry. "*Cooking a Honker* has been a win-win deal for all parties, and we will be reprinting it."

Media coverage of the cookbook has been extensive, says Greg Belloni, account executive with Brown-Miller for the LVWA. "The cookbook has introduced the Livermore Valley wine country to many people who never knew it was here, in the Bay Area's backyard. People are getting out to the valley and seeing it's a great place to go." Belloni reports that attendance at the LVWA's Harvest Wine Celebration on Labor Day weekend was up 20 percent from the year before, for example.

"I'm so proud of this book," exclaims Replogle. "I think we all feel that it is our child."

While all the committee members agree that the cookbook was definitely worth the effort, they suggest that other wine regions consider the work entailed carefully before launching a similar project.

"We all had to do a lot more than we ever anticipated," says Mueller. "You have to put your life on hold," agrees Replogle. "It takes twice as long as you ever expect it to."

Identifying the personality of a winery or wine region is crucial, these experts say. "You have to look at how you define your region, how the collective wineries define your region, and what you want to emphasize," explains Replogle.

"The book has to reflect your area's personality, because everybody's different. The personalities within the region are what really gives it flavor. Everybody wants to be a Napa, but they're not," Mueller adds.

Belloni says that's the best advice he can offer, too. "Be yourselves. The cookbook was going to reflect a personality like Napa or Sonoma, but we found that isn't Livermore. *Cooking a Honker* has the personality of the valley. What's very slick and successful elsewhere may not fit your image."

Getting agreement from the association members was a vital element in the project also, says Perry. "Any time you tackle a project like this, you have to have clear goals and objectives in mind. You must have consensus that it will be good for your region and then have good people working on it." The way to get consensus, suggests Mueller, is to "prepare in advance for opposition to the idea. Have a business plan, a small mockup of the book, and a budget to demonstrate that the idea will make money."

Other advice? "Persevere!" says Mueller. "Be flexible!" adds Replogle, and she reminds: "You gotta laugh in the wine business." ■

Elements of taste

WINE: Fruit, Acid, Alcohol, Sugar, Tannin

FOOD: Fat, Acid, Salt, Sugar

by Millie Howie

Wine educator Jeff Prather uses two acronyms, FASS and FAAST to describe the basic elements of flavor in food and wine and to form a food and wine pairing system that consumers can use and understand. In his "Elements of Taste" food and wine seminar, FASS stands for the major elements fat, acid, salt, and sugar which describe food, and FAAST stands for fruit, acid, alcohol, sugar, and tannin which describe wine.

Six years ago, when Prather was promoting a book he co-authored with Paul Gregutt, *Northwest Wines*, he developed the food and wine seminar he now presents to distributors, staff members, and restaurateurs in his role as wine education director for Beaulieu Vineyard (Rutherford, CA). The book offers a discussion of wine with a basic description of Prather's system.

"I think the business of matching food and wine has become too esoteric," Prather maintains. "By reading a menu these days, you learn everything — where a tuna fish comes from, what color its fins are, and everything imaginable about each vegetable and seasoning in the side dishes and the sauce.

"Talking about wine gets that way, too, with such descriptors as truffles, blueberry, wet dog, and sweaty saddle. Maybe all that is OK for the professionals, but for the general consuming public, it only adds confusion. People on tours at Beaulieu sometimes ask, 'When do you add the chocolate to the wine? When do you put in the blueberries?'

"They have read these terms in many consumer wine magazines. I think consumers often tend to make literal translations of this flowery prose. My thought is to make pairing food and wine easy, to help consumers build a starting point, so they won't fall back on the 'white wine with fish and red wine with meat' cliché."

In looking for a simple way to express food and wine affinities, Prather considered himself. "I have the sort of memory that needs help, so I looked for a way to make remembering easy. When I was sommelier at Ray's Boathouse in Seattle, WA, and we taught our staff the basics about wine, I thought we needed some acronyms to explain the elements of taste simply. I came up with FASS for food and FAAST for wine. From this I tried to think of foods which illustrated FASS and designed a tasting to include examples of each of these foundation elements.

"I don't have the knowledge of technical or picturesque terms, but I do have a working relationship with food and wine that I can pass along to the consumer. When you focus just on FASS in food and FAAST in wine, people experience a breakthrough in understanding that happens when food and wine reach their tongues."

How the tasting seminar works

The tasting seminar includes five glasses of wine, curved around a plate containing slices of apple, a block of dry jack cheese, a thin slice of Italian prosciutto, a thin slice of medium-rare roast beef, a wedge of triple-cream cheese, a slice of lemon, and a cookie.

Prather uses a Granny Smith-type apple, which has good acid and sugar, and the lemon slice for pure acid. The

Photo by Fred Lyon

Jeff Prather is director of education for the historic Beaulieu Vineyard in Napa Valley. He recently moved to California to open the Culinary Institute of America's west coast campus at Greystone as restaurant director and cellar master. He is best known for his decade of work as wine director for Ray's Boathouse in Seattle, WA, where he won several awards, including four James Beard Award nominations, *Restaurant Hospitality* magazine's Best American Wine List, *Wine Spectator's* Best of Award of Excellence, and *Restaurant Wine* magazine's Wine Marketer of the Year nominee. Nationally known as an expert on wine service, wine and food pairing, and Northwest wines, he has judged at numerous wine competitions and is a frequent speaker and guest sommelier at many events around the U.S. As a writer, he has been published in several magazines, is a correspondent for the Microsoft Online Network (MSN), a contributor to Oz Clark's *Microsoft Wine Guide* CD-ROM, and is co-author of the book *Northwest Wines*.

dry cheese is high in salt and fat, while the triple-cream cheese is basically fat. The prosciutto and beef both provide fat, and the prosciutto is high in salt as well. The cookie represents the sugar element.

Arranged left to right, the wines range from a fruity white, such as Riesling, through Sauvignon Blanc, Carneros Chardonnay, Carneros Pinot Noir, and Rutherford Cabernet Sauvignon. Each wine is tasted with three food items. The apple is sampled with each wine, and all other foods are tasted with three wines.

To begin, participants rinse their mouths with water. The Riesling is tasted and discussed. Prather asks what elements of FAAST are apparent? Then the tasters sample the apple, and its FASS is identified. A sip of the wine follows, and tasters are asked if the wine seems to have changed and how it has changed.

"This works," Prather says, "because the brain recognizes only two things: what's in the mouth and what has just been tasted, unless something with an incredibly strong flavor, such as garlic, was consumed earlier. In this first example, the apple cancels the fruit in the wine, leaving a perception of sugar and acid only. Every time you take something away from wine, something else moves forward."

Next, the lemon is tasted, followed by a sip of the same wine, and tasters note that the strong acid flattens out the taste of the wine. The wine itself does not change, it is only the perception on the palate. This graphically illustrates the belief that there is no wine which can stand up to salad dressings. However, Prather suggests, there are dressings which will work with wine if the amount of acid in the dressing is kept low, perhaps by using a very small amount of balsamic vinegar or an extremely small amount of lemon juice or wine itself.

Prather also warns students to avoid the slice of lemon traditionally served with fish dishes. "The intent of supplying the lemon," he remarks, "is to cut the fat from the oil in the fish, but when you are having wine, you probably do not need the lemon for that effect.

"When salmon is served with Pinot Noir, for example, there decidedly is no need for lemon. The same holds true for wine and shellfish. The only exception might be in the case of oysters, which have high glycerin and may need the additional acidity."

In the third pairing, the jack cheese, with its high fat and salt content, almost destroys the light white wine. Prather suggests students select a wine with high fruit or with carbonation to successfully combine with the jack cheese. Bubbles scrub the salt off the tongue. This explains why champagne and caviar are so often paired.

When the Sauvignon Blanc is tasted with the apple, the lingering effect of the wine in the mouth makes the apple taste less acid, while the apple makes the wine taste less fruity. The lemon destroys the acid in this wine as it did in the first white, while the salt in the hard cheese makes the wine taste flabby.

At this point in the tasting, Prather compares food and wine pairings to a dance floor. With the wine alone, all the dancers are on the floor, but in unsuccessful matches, the various food flavor elements knock out the fruit, acid, and sugar leaving the dance floor nearly empty. With a successful match, the elements balance each other and let the primary flavors dance at center stage.

"I use a lot of analogies and jokes in my presentation," remarks Prather. "I point out, frequently, that this demonstration might be subtitled 'How to Make Wine Taste Really Bad.'" Prather likes to play off the audience and encourages them to voice their reactions. "Basically," he admits, "they are teaching themselves. They take home what they have experienced in the seminar and replicate the experience for their guests at dinner parties. It's a tool they can use in pairing wine and food for the rest of their lives."

When discussing the wines, particularly the Carneros Chardonnay which is a more complex wine, Prather says tasters don't need to know the chemical specifics of the wine. "I am not a winemaker, so I do not deal with numbers. I use the five simple descriptors, FAAST, and the sensation on my palate."

Turning to the Chardonnay, tasters find that the impression of sweet-tart in the apple is not influenced by the Chardonnay, but the apple diminishes the expression of the fruit in the wine, so more oak and acid are experienced. For this reason, Prather suggests, it is wise to order a fruitier wine, such as Chenin Blanc, Gewurztraminer, or Viognier if you are presented with fish with a fruit sauce, rather than indulging in your favorite Chardonnay.

"At this point in the discussion, I introduce a simple explanation of malic acid, found naturally in many fruits, and lactic acid, which forms as milk sours, to help the audience understand the term malolactic, and why winemakers encourage this secondary fermentation to induce a soft, rich, buttery influence in wine, particularly in Chardonnay."

A bite of hard cheese with the Chardonnay allows Prather to explain another common fallacy. Nearly everyone has been invited to a wine and cheese party. "But you have to be careful," warns Prather. "There are a billion different cheeses and a billion Chardonnays, and they do not all go together. In extremely simple terms, the more complex the wine, the more fun and interesting it is to match cheese flavors."

Looking at the triple-cream cheese with the Chardonnay, Prather uses another analogy — this time with a high jump. "The food sets the bar," he explains, "and the wine is the jumper. If the food is bigger than the wine, the wine comes running up and can't go over the bar. In an extreme mismatch, the wine may go under the bar, but more likely it will bump into the bar. It isn't only a 60% butter-fat cheese that creates this impasse. Any butter or cream sauce is going to demand a more complex wine, too."

As the tasting continues, tasters discover that, in Prather's words, the salt in the prosciutto strips the soul out of a wine. "We discovered an interesting thing when we put this together. Imported Italian prosciutto has more salt and fat than domestically produced prosciutto, which is considerably milder."

When tasting the beef and wine combination, a new element is introduced; fatty animal protein which is a strong-flavored fat. The more rare the beef is, the more acid and tannin is needed to balance the fat so that the flavors are bright. Tannin is needed in the wine to counterbalance the richness, since tannin helps cut through the fat. Where, with the fully cooked and cured prosciutto (with the added element of salt), the wine bumped into the high jump bar, with the beef, it is possible for the wine to equal the fat content and squeak over the bar. This is particularly good information for those who suffer from an allergic reaction to red wine or do not allow red wine in the house due to white furnishings and rugs. A big, heavy, oaked Chardonnay may pair nicely with a roast beef dinner because of its wood tannin.

In the Carneros Pinot Noir tasting, both the apple and the wine are less interesting in tandem. The hard cheese is hard on the wine. Its fat demolishes the wine's acid, and the salt wipes out the fruit. The triple-cream cheese, though less salty, has so much fat it makes the wine taste flabby. Prather advises that these cheeses and Pinot Noir be kept apart, although some other cheeses do work with Pinot Noir. The prosciutto is another bad choice, and while the beef is not bad, it would take a pretty powerful Pinot Noir to stand up to it. A better choice with Pinot Noir might be an extremely lean cut of beef, veal, pork, or poultry (particularly duck).

Eating the apple with the Rutherford Cabernet Sauvignon, which has no noticeable sugar, makes the tannin in the wine more evident. To use his high jump analogy, the wine goes easily over the bar, when tested by both the hard and triple-cream cheeses. This effect reminds Prather of an old English wine merchant's axiom: *Taste* wine with fruit (which reveals any faults), and *sell* wine with cheese (which masks the faults).

"I don't like hard rules," says Prather, "but there are some guidelines I agree with. If there is a single good match for fatty cheeses like Brie, it is Cabernet Sauvignon. On the other hand, if there is something you like, which seems to go against all the rules, then ignore the rules and enjoy your own favorites but do try to analyze how FASS and FASST work on your individual palate."

The prosciutto and Cabernet Sauvignon were not a bad mix, but this combination is not one a visitor to Italy would be apt to find. "The Italians don't match prosciutto with red wine," Prather explains. "They wrap the meat around a piece of melon to balance the food for an entirely different flavor concept. Try it yourself, with a piece of apple wrapped in the prosciutto. When you add fruit, the meat becomes far less assertive. Sometimes in preparing a winning combination you want to play with the food balance first, then add the wine."

Cabernet Sauvignon with beef is considered a classic combination. "The fat of the meat balances with the acid and tannin of the wine," Prather notes. "The fruit in the wine gets to dance with the fat in the beef, creating a wonderful samba on your tongue."

The final flavor pairing is a sweet cookie with the first, light, fruity wine. "Sugar is probably the most powerful flavor on earth," Prather says. "It will pretty much overpower any flavor in your mouth, that's why I do admit to one hard and fast rule: dessert wine has to be sweeter than the dessert, because the sugar will dominate any less sweet wine and make it seem tart."

Conclusion

Prather feels it is a disservice to both the industry and the consumer to use what he refers to as "high-faluting" descriptors that people can't really understand. Instead he searches for a common ground which encourages communication.

"When you get into esoteric terminology you are catering to the snob element — a behavior I have been fighting against my entire career. My simplification and emphasis on FASS and FAAST is not the be-all and end-all, but nobody has come up to me after a seminar and said, 'I'm more confused now than I was before we started.' That tells me I must be doing something right." ■

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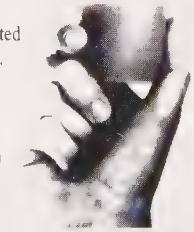

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SUSTAINABLE VITICULTURE in Mendocino County

by Millie Howie

"Mendocino County is finding its niche viticulturally," says Glenn McGourty, University of California Viticulture Farm Advisor for Mendocino and Lake counties in California. "Sustainable agriculture and organic farming are components of that niche. There is a strong interest in the environment among many growers and the surrounding community. Many supportive people, including the Agricultural Commissioner Dave Bengston, private crop consultants, and vintners value grapes produced using environmentally sound techniques.

"The county's climate and landscape help growers reduce pesticide applications. Most of our farmland is surrounded by forest and range land loaded with generalist predator and parasitoid insects. Winters are too cold for Pierce's Disease to survive, yet summers are warm and dry — a good grape climate. We are fortunate because, for winegrape production, organic and sustainable farming systems work quite well in this county."

About 20% of Mendocino County's 14,000 vineyard acres is certified organic. "At least 70% of the growers have made significant changes in vineyard practices toward more sustainable viticulture, including cover cropping, reducing or eliminating use of insecticides and miticides, and using sulfur dust instead of sterol inhibitor fungicides for powdery mildew control. Many growers farm nearly organically with the exception of using Roundup and small amounts of an emergent herbicide in vine rows."

The county now has a network of 60 Adcon Telemetry weather stations, which McGourty asserts is proportionally the largest number of stations per vineyard acre anywhere. "I began working with Carla Thomas and Doug Gubler in the early 1990s on their Powdery Mildew Index model. We were one of the first districts to test and validate it. Adcon's first weather system in California was set up in Mendocino County for Kohn Properties (the Fetzer family). Our growers are very open to new ideas, while still holding on to traditions that produce good fruit and make sense.

Tom Piper, vineyard manager, samples compost to be used in Fetzer vineyards.

"Growers have embraced many concepts of sustainable agriculture, including the notion that a vineyard is a living system, and diversity of organisms in this system is a sign of health. The soil is alive, and farming to encourage a diverse microflora ultimately helps plant growth in many ways: aiding in nutrient cycling, aggregating soils for better physical structure, and creating antagonism towards harmful diseases and pests that can be present in vineyards. These are not new concepts, but many were forgotten during the 'better living through modern chemistry' era of the 1960s and '70s."

McGourty identifies the following growers as people who are on the leading edge of sustainable farming in Mendocino County. Though they all acknowledge that sustainable farming can be more expensive, they believe that, over time, the benefits outweigh the costs.

Fetzer Vineyards & Winery

Every vine planted on the 350 acres owned by Fetzer Vineyards & Winery (Hopland, CA) produces organic grapes for the Bonterra brand without use of any artificial fertilizers or synthetic chemicals, including pesticides, fungicides, herbicides, soil fumigants, growth regulators, or hormones. Instead, emphasis is placed on building a living soil, an environment that encourages beneficial organisms at all levels.

Half of the Fetzer vineyard acres were certified organic by the California Certified Organic Farmers (CCOF) in 1990. By 1995, all of the acreage was certified. The first wines from organically-grown grapes released by Fetzer were a red table wine, produced from the 1990 harvest, and a 1991 Chardonnay. In 1993, Fetzer wines from organic grapes were given their own brand name, Bonterra.

Vineyard manager Tom Piper has had five years experience with organic and sustainable farming at Fetzer Vineyards, under a wide variety of weather conditions, and is enthusiastic about the benefits.

Making the best use of cover crops

Piper credits McGourty with helping to develop Fetzer's farming practices, starting with introduction of a system for cover crops, which have been used consistently in all Fetzer vineyards since cooperative trials with UC extension in 1991.

He has found that cover crops benefit the vineyard by serving as habitat for so-called "beneficial bugs," suppressing weed growth, and improving plant nutrition by making soil nutrients available. Cover crops also reduce tractor trips through the vineyard and the amount of tillage. Fetzer vineyards show traceable improvements in organic matter, potassium, calcium, and cation exchange capacity.

Each year, every other row middle is disked and seeded to annual cover crops. A non-tillage system — of planting perennials or self-reseeding annuals and mowing but not disking them, regardless of soil type — is left in place in the alternating row middles for at least three years. After three or more years, the row middles that were seeded with annual cover crops are changed to the non-tillage system, and for the next three years or so, the formerly non-tillage row middles are disked annually and seeded with annual cover crops.

Decisions about what cover crop to plant are influenced by the amount of maintenance necessary and the need to create competition for vigorous vines. Where the ground retains a lot of moisture, the non-tillage planting is predominantly perennial grassy mixes. Most other locations are planted with a mix of four different sub-clovers prepared by Lohse Mills. All four sub-clover varieties are originally from Australia: Koala, Karridale, Trikala, and Mount Barker. They grow rapidly through February or March and are mowed at bud break to force the plants to tiller and spread.

Before post-harvest seeding, which Fetzer tries to do by October 15, the seed bed in the tillage rows is prepared by light disking (two to three inches deep) to get good seed-to-soil contact. Annual seeds are drilled in to use less seed and insure a better stand. The seeding rate is 30 pounds per acre of a mix of 50% California red oats, 20% bell beans (a type of fava), 20% Austrian winter peas, and 10% Oriental radish. This mix may be alternated with plantings of Crimson clover or Berseem clover to provide additional nitrogen. After the seed has been drilled in, 24 to 48 hours of overhead irrigation is applied. Perennials reseed themselves.

"Where the vines are more vigorous, we use more competitive perennial cover crops," explains Piper. "For example, with Sauvignon Blanc on a heavy soil, we seed a grass-based dwarf mix from Lohse of 80% grass and 20% clover — Delaware rye, chewings fescue, creeping red fescue, New Zealand white clover, and bird's foot tri-foil — on every other row middle. Where the soil is sandy, we seed sub-clover every other row middle, because those vines are not as vigorous. The only other place we use perennial grass is in a wet part of one Merlot vineyard.

"We always try to select fool-proof cover crop material that can be used everywhere, because it works so well," explains Piper. "On hills, we minimize bare ground, and for new plantings on high hills, we seed cover crop in every row middle and broadcast annual clover [over it] before planting vines."

At pruning, additional plant material is added when pruned material is cut up into small pieces with a flail mower and left in the no-till permanent row. Since much of the vineyard is in the Russian River flood plain, this is usually done the day after the vines are pruned, unless the ground is too wet for equipment to get in. This prevents flood waters from piling prunings around the vines.

Before disking the annual cover, usually at bud break, the rows are overhead watered for eight to 12 hours if necessary to make the ground friable. The cuttings are turned into the soil with a deep disking using the diagonal side of the disk obtuse (acute angle for blades). A week later, the vineyard will be disked again, with a wide-open setting. A third pass will be made, with the blades in an acute position for weed control, and soil moisture monitoring may prompt Piper to send crews in to disk one more time, probably after set in June.

Sauvignon Blanc, Cabernet Sauvignon, and Zinfandel vines are pruned late in the season to guard against Eutypa infection. Where the Eutypa infection is prevalent, the completely dead arms are removed in the driest part of the year, right after picking. Every third year, a complete inspection is made in September.

Controlling insect population

It is Piper's firm belief that the worst method a vineyardist can use to control harmful insects is to spray insecticides. "In 1992, we used soap spray to get a handle on a problem with Pacific mites and got about a 50% kill. Since then, we haven't sprayed for anything.

"At Fetzer, we like to follow the practice of furnishing plants to provide habitat for predator insects. Fetzer's use of annual cover crops has proved to be highly effective, since the radish and bell bean blooms attract a lot of lace wings, lace wing larvae, and lady bugs. Monitoring of the population of destructive insects is conducted all season, and where there have been problems in the past, particularly with mites, spot checks will be made more frequently.

"In 1994 and 1996, the mite infestation was very bad. We got clobbered," recalls Piper. In a research plot begun in 1994 with Dr. Keith Striegler, research scientist of the Viticulture & Enology Research Center at California State University-Fresno (CSUF), Fetzer farming practices were changed to help control mite infestation. More attention is now focused on timing of irrigation, and less tillage occurs in the vineyard, reducing dust generation. Care is taken to see that the vines are not stressed in problem areas, and strict attention is paid to sudden temperature spikes.

"When we get spikes which soar from 90°F to 107°F, the vines suffer severe stress and the mites proliferate," states Piper. "That calls for us to increase irrigation. Instead of adding water for 24 hours every two weeks, we narrow the irrigation interval in the affected sections of the vineyard to every nine days."

The Zinfandel vineyards, which have no drip irrigation, are the most susceptible to mite damage. "Permanent cover crops help with mite control by reducing dust," says Piper. In those vineyards, the cover crop planting has been improved, and Piper tries to anticipate heat spikes and uses overhead sprinklers before or during the peak.

Weed control

As soon as the ground dries out and is friable after bud break, weed control begins. Fetzer uses a Clemens weeder on both sides of the vine to an ideal depth of two to three inches below the soil surface. This interrupts contact of the weeds' roots with the soil. In a 10-hour day, an experienced tractor driver can cover 25 acres. Three passes are made: the first, between bud break and flowering; the second, post-berry set; and the third, in June. Roughly, this works out to one complete trip through the vineyards every month in April, May, and June.

The only system Fetzer has found for eliminating Bermuda grass has been to remove it by hand late in the year when the ground is dry. Where it is prevalent, the roots (as deep as six inches) are dug up to the surface and exposed to the sun and wind to dry out.

Fetzer's organic weed control methods are labor-intensive, costing more per acre than conventional farming.

Compost and fertilization

For compost, Piper prefers composted red grape pomace, so he tries to hold that separate at crush. He gives the white pomace to other growers or uses it in Fetzer landscaping. The compost is set out in long windrows during winter.

Beginning in the spring, Piper digs into the mass with a 14-inch thermometer and takes a temperature reading. When the pomace heap is at least 140°F, but less than 160°F, the windrow is turned. Pomace is turned six times during one year of processing.

Within 30 days after harvest, finished one-year-old compost is spread (1 to 1.5 TPA) and disked into the vineyard. Cover crop is seeded on top of it in the annual rows.

Grape compost is rich in potassium, which the vines can readily utilize. Piper feels using compost is better than putting on a commercial potassium fertilizer, which isn't readily available to the vines.

Soil analysis is done every second or third year on each block.

Cover crops in vineyards before replanting

In preparing ground for installation of new vineyards or replanting (as was recently accomplished with 21 acres of Viognier), the first step is to apply two tons per acre of pomace. Then the soil is ripped three feet deep in two directions.

A seed bed is prepared, and a cover crop is then seeded over the entire block to grow through the winter. Before vines are planted in spring, the cover is disked seven inches deep in two or three directions.

In preparing to plant a new Cabernet Sauvignon vineyard, Fetzer broadcast a sub-clover mix over the site, and low, sloping terraces cut on the contour were covered with straw.

Trellising and irrigation

Fetzer uses vertical shoot positioning trellis systems on more than 100 acres (Merlot, Sangiovese, and Viognier). All the Chardonnay (clone #4 selection) is on a T-trellis, and leaf-pulling is done by hand. Piper believes that, in Mendocino County, a T-trellis protects Chardonnay grapes best from getting too much sun.

Mildew protection

Two-thirds of the Fetzer acreage is in Chardonnay. Almost all of it is planted at the lowest elevations between the Russian River and Highway 101, where humidity and cool air are concentrated. At bud break, the annual cover is mowed down to six to 12 inches in height to reduce humidity and encourage air flow. Between bud break and three inches of shoot growth, six pounds per acre of wettable sulfur are applied in all vineyards. The great challenge is to control mildew until flowering.

Sulfur dusting in the Chardonnay vineyards is begun seven to 10 days after the wettable sulfur application, and repeat dusting applications are made every seven to 10 days after that, when needed, and continue until veraison. Ten to 15 pounds of sulfur are used on every other vine row, alternately, and the dusting method is preferred because it causes the least impact.

Fetzer uses an Adcon weather monitoring system to help with its powdery mildew management program. Depending on the readings, the intervals for sulfur application are adjusted. At an index of 70 or above, consideration is given to narrowing the interval to five days between applications. Below 20 or 30, the intervals may be extended to 14 days, or even longer.

In the rest of the vineyards, mildew is not a real problem. Mildew is usually only a concern in the Chardonnay vineyards from March until May; at other times, the naturally occurring heat and drying winds prevent disease development.

Botrytis

Leaves are pulled beginning at berry set. "This is probably our most important vineyard practice," Piper remarks. "If we experience unseasonable rains, we will make a 50% copper and 25% sulfur dust application on the Chardonnay and Zinfandel (20 pounds per acre). The cover crop makes it easier for us to move equipment in to do this.

"In June 1997, the vineyards got ¾-inch of rain, which caused some Botrytis, but the weather cleared and it dried up. Then on August 19, with the Chardonnay only at 20° Brix, a heavy rain came through. The next day, we ran empty duster machines through the vineyards for 12 hours to stir the air and force the moisture off the vines. In some vineyards the dusters traveled down every row middle, depending on the degree of wetness. In others, a pass down every other row middle was adequate. The next day, the dusters were run an additional three hours."

Because the duster was empty, the operator could maintain a speed of about 7mph with the fan turning at top speed. Then, the hand crews went in and removed any fruit that showed signs of mold and did a little more leaf pulling. The next month, there was another rainy period. After that rain the crews moved in immediately and picked at 24° Brix. Bunch-rot damage was minimal.

Other challenges

Leafhoppers always follow vigor in the vines, so they will be seen occasionally in the more vigorous sections of vineyards. However, since the crop level in these blocks is held to eight TPA, Fetzer usually doesn't see any leafhoppers.

Pierce's Disease, transmitted by sharpshooters, is not severe in Fetzer vineyards. McGourty suggests this may be because of Mendocino County's colder winters, which inhibit the bacteria. Still, for safety's sake, the winery follows all the research studies, and Dr. Sandy Purcell from UC Berkeley is monitoring one Fetzer field which has some vines affected by Pierce's Disease.

Thrips are noted when spring weather is exceptionally cool, but they do so little damage that no action is taken against them.

Continuing research

In 1996, as an outgrowth of the production of the organically-grown Bonterra grapes, CSUF instituted a study at Fetzer of three vineyard problems which keep other growers from growing 100% organically: weeds within the vine row, mites, and mildew. CSUF is testing fields where these problems are extreme.

The mildew study is being conducted in a 20-acre Chardonnay vineyard. The mite trial, on 10 acres of Chardonnay and Zinfandel, began data collection in 1997. The research site for weed control is another 10 acres of Merlot.

The future

Paul Dolan, president of Fetzer Vineyards, speaking at a meeting of independent Fetzer growers, expressed his feelings about benefits of organic grapegrowing: "Wine is a beverage different from all others. Its flavors are based on the soil and the environment. The things we are doing to the soil are going to have a beneficial impact on the wine.

"I strongly believe that if you support healthy practices in the vineyard, you will be rewarded with unique wines which will be highly competitive in the marketplace."

Ag Unlimited

As an independent crop consultant, Devin Gordon is another grower who has influenced sustainable practices in Mendocino County. As a pest control advisor, he oversees many different sustainable systems, and as a custom operator, he seeds cover crops to about 1,000 acres of vineyard annually. "While my 50 acres are not certified organic," explains Gordon, "I have been working with organic growers for about seven years, and it seems that there are as many cover crop combinations as there are farmers — none of them totally right and none totally wrong.

"I encourage non-tillage systems whenever possible, because I feel that destroying soil structure is not a good idea. However, this can create some plant competition which may not be desirable. If this happens, I recommend a summer obligate dormant cover crop, which doesn't grow in the hot, dry season.

"In erosion situations, I encourage native vegetation whenever possible. I also try to let cultural and fertility practices dictate whether or not I use every other rather than every row cultivation practices."

Gordon says that the cover crop choices he recommends in high fertility sites, such as Russian River loams, range from clover mixes alone to clover mixes with orchard grasses, depending on the nitrogen levels of the site and the relative wetness of the soil. Where nitrogen levels are moderate, he recommends equal amounts of clover to grass.

"If the soil is wet with adequate levels of nitrogen, I might be inclined to go with a straight grass, orchard or native, depending on the amount of competition needed. In a soil which is low in nitrogen and where competition is not a factor, I might recommend a straight clover mix.

"We have been trying to use Cahaba White Vetch at sites where nematodes are creating problems. I can't say whether we have or have not seen any definitive results. In hillside applications, I encourage native species where applicable.

"Seed beds need to be prepared with some care. You need to end up with a firm cultivated seed bed, preferably not deeper than the desired planting depth. A general rule of thumb is to plant the seed three times deeper than the diameter of the seeds, however, if you prepare a seed bed three inches deep for a vetch and pea mix, it may be too deep to plant a sub-clover mix."

Monitoring seed drill depth is also very important and directly coincides with planting depth. It can be very hard to adjust drill depth if the soil is loose.

"How you handle the cover crop the following spring and summer is totally dependent upon your intentions. For example, if you have an annual sub-clover mix that you intend to keep for several years, you must wait until flowering and seed formation have occurred. Then, I recommend mowing.

"If you have an annual legume crop that you are growing to maximize production of nitrogen and organic matter, then maximum nodulation will occur in the root structures just prior to full bloom in most legumes. However, you must time the subsequent mowing and disking with the growth cycle of the vines. Incorporating this green material into the soil may take resident microbe populations out of the de-nitrification cycle as they start to break down the material you have laid down and incorporated in the soil. Vines need available nitrogen at this time, and removing the microbe population will reduce available nitrogen in the root zone.

"If a cover crop is intended to be used as beneficial insect habitat, or just to create biodiversity, then it should be left intact throughout the summer.

"As far as weed control is concerned, I think we do suppress morning glory with non-tillage systems, however we will see populations return as soon as the cover is turned under. Cover crops on their way in or on their way out will have intermittent populations of various natives, while strong permanent cover crop stands seem to be devoid of annual weed species."

Most organic growers use mechanical weed control methods, Gordon reports, calling this the biggest and most costly hindrance to organic farming. To achieve adequate weed control, he explains, the best organic farmers will spend a few hundred dollars more per acre than conventional farmers.

Mendocino Vineyard Company

Mendocino Vineyard Company (MVC), a subsidiary of Beckstoffer Vineyards, has 1,000 acres in Mendocino County managed by Michael Boer. MVC manages 25% of Andy Beckstoffer's Vineyards in Mendocino as CCOF-certified or transitional organic. MVC began the CCOF certification process for the Beckstoffer Russian River Vineyard (BRRV) in 1989, producing the first certified crop in 1990. BRRV is a 106-acre vineyard producing both Chardonnay and Cabernet Sauvignon grapes for Fetzer Vineyards & Winery's Bonterra program.

Annual green manure cover crops have been used primarily in alternate vine rows and consist of seed mixes which include oats, bell beans, peas, and vetch. These mixes are used to enhance short-term organic matter content and to stimulate soil micro-organisms. This cover crop is mowed when bell beans are in full bloom and is incorporated by disking in immediately (same day) after mowing.

Moisture-obligate California native perennial grasses (*i.e.* covers which respond to rain or irrigation by re-greening) — blue wild rye, Cal brome, and California Barley — have been experimented with on high vigor sites to manage soil moisture and vine vigor. These grasses have been planted both between every vine row and in alternating vine row middles.

The native perennial grasses are mowed once or twice per season, depending on amount and timing of rainfall and frost protection. Brush from pruning is chopped by flail mower.

Composted grape pomace, mixed with various composted manures (mainly cow manure) and some limestone ($CaCO_3$), is applied to most of the vineyards. "We believe that the application of one ton per acre of composted material every other year has had a remarkable effect in the microbial activity and nutrient availability of our soils," observes Mike Boer.

Weeds are controlled in organic vineyards with disc, hoe plow, or Clemens; weeds in conventionally farmed vineyards are controlled by sprays with Roundup.

"We have had the greatest losses due to Botrytis in our organic vineyards," says Boer. "We are experimenting with foliar-applied calcium products to give better organic resistance to Botrytis, with promising early results." MCV has used Vigor-Cal, a foliar micro-nutrient. "We spray it on during the growing season," notes Boer, "starting two weeks prior to bloom, making four applications two weeks apart. (Devin Gordon's Ag-Unlimited distributes Vigor-Cal in Mendocino County for Agro-K in Minnesota. It is created by a fermentation process.)

"We didn't do triple replication trials," explains Boer, "but our impression is that the bunches held up better. We used Vigor-Cal on Chardonnay, and we did a number of individual blocks. While we have never been plagued by Botrytis, it is always a threat, and 1997 was particularly bad.

"We also used Agro-K's finishing product, Potassium 0-0-6. We applied it twice; once at 18° Brix, and again two weeks later. The main purpose was to aid in sugar accumulation, but we found it also helped with Botrytis. In our organic vineyard, we left five acres unsprayed. When we checked, we found that the unsprayed block had the worst-ever Botrytis.

"To fight Botrytis, we use Adcon Telemetry software to calculate disease potential for both Botrytis and mildew. We have six stations in Mendocino County on our 1,000 acres of vineyard," concludes Boer.

Ceágo Vinegarden

Jim Fetzer purchased the vineyard, now known as Ceágo Vinegarden at the McNab Ranch (Ukiah, CA) in 1993, at which time he replanted 120 of the original 140 acres. Today, 30% of the vineyard operation is certified biodynamic, 35% is certified organic, and the balance is transitioning into organic.

"At Ceágo, we have planted Chardonnay clones #76 and #96, Viognier clone #1, Merlot clones #3 and #181, and Petite Sirah (old vine), which has been identified as Durif," says Fetzer. "This year (1998), we will be planting Cabernet Sauvignon clones #8 and #15. The majority of these grapes are sold to Fetzer Vineyards for its Bonterra program."

The main sources of nutrition for the vines at Ceágo are compost and green manure. "We obtain composting materials made from cow and chicken manure and pomace, with additions of soft rock phosphate, if needed, from Cold Creek Compost in Potter Valley, CA," explains Fetzer. "We also have a source for horse manure mixed with straw, as well as sheep manure from our flock of sheep, which is composted on the ranch. "Compost is normally added in the fall after harvest, if needed, prior to the seeding of cover crops."

Every vine row middle at Ceágo Vinegarden is planted with cover crop every year. After evaluating the soil analysis and nutritional needs, Fetzer looks at the vineyard site in relation to erosion and soil type to determine what mix to plant.

"In deeper soils we plant rye grass, mustard and clover, every row middle in five-foot wide strips. Our routine is to harvest, apply compost, and seed every year. We irrigate and get the cover established before the rains start."

The cover crops are controlled by mowing, or in some areas, by allowing sheep to graze between the vine rows. Under-the-vine weed control is accomplished with a two-headed Clemens, mounted in front of a Posi-Trac tractor. Between-the-row cultivation is accomplished with a disc or spading machine to incorporate the cover crop. Vine vigor at Ceágo is controlled by water and cultivation management, and pests are controlled by diversity of habitats and introduction of beneficial predator insects if needed. Disease is mainly controlled with sulfur and extensive canopy management practices.

Bartolucci Vineyards

"My experience with organic farming began in 1988," recalls Ron Bartolucci, owner and vineyard manager of Bartolucci Vineyards (Finley, CA). At that time, as director of vineyard operations for Fetzer Vineyards and Winery, he began transitioning the Fetzer vineyards from conventional to sustainable and finally to certified organic farming. When the Fetzer family sold to Brown-Forman, Bartolucci became, and continues to be, a viticultural consultant for Fetzer.

Though his own vineyards are in Lake County, Bartolucci has been an important advocate of sustainable agriculture in the area and consults for clients in Mendocino, Lake, and Monterey counties. "We have three vineyards in Lake County: one on Crimson Ridge at 2,000 feet elevation, on a steep slope with red volcanic soil, and two in Big Valley near Lakeport at 1,300 feet elevation. One has a valley type soil with clay and rock, the other is quite loamy.

"We had phylloxera in the vineyards, and when we pulled out the dying vines, we turned to farming organically. Our first vineyards were certified organic in 1993, and we now have about 100 acres certified and producing Chardonnay, Cabernet Sauvignon, Merlot, Muscat Blanc, and Viognier grapes for the Bonterra label. We have another 70 acres which are transitioning to organic and are planting another 50 acres this spring.

"Our primary goal [with converting to organic farming] was to increase the amount of organic matter in the soil. Therefore, we selected cover crops that produced the greatest amount of biomass possible — a mix of vetches, cereals, and peas. We seeded these covers every other row middle.

"Prior to going organic, we took soil tests to establish a baseline. Then, we continued to take soil samples every two to three years to assess changes and needs. The soil needs, of course, are placed in the context of the vines' response (*e.g.* vigor, crop load, fruit quality) in the environment.

"We utilize soil tests to analyze macronutrients in the soil. We begin by addressing our most limiting factor. In the North Coast of California, that usually is the lack of calcium and the relationship of calcium to magnesium and potassium. We add calcium, either through gypsum or lime additions, depending on the pH.

"Then we look at the vine, based on soil and petiole tests, and seed what we feel are the appropriate covers. Based on the data collected, we design cover crops appropriate to various blocks in the vineyards. For example: in one block, we have planted a mix of bell beans, cayuse oats, magnus pea, and common vetch. In other blocks we have a mix of oats, three different peas, and radish every other row middle, with common yellow mustard in the alternate row middles. In still another block, we planted a mix of four sub-clovers as a permanent cover in every row middle.

"We feel that permanent cover crops have their place but still have questions about grasses, which we feel may devigorate the vines in certain soils.

"Normally, sometime in April, depending on the weather pattern, we mow the common mustard, and disc the cuttings into the soil to a depth of six to eight inches. With the radish mix, we mow three or four times each year to a height of 16 to 18 inches to maintain habitat for beneficial predator insects. Depending on the amount of rainfall we get, we will leave every fourth row middle to generate habitat and disc it under when the cover crop has outlived its predator insect benefits.

"After the sub-clovers germinate, we will mow several times, because the more you mow them, the faster they spread. When we think the cover is as thick as it will get, we stop mowing. The plants do not grow very tall (12 inches), and they tend to reach dormancy in early summer and start regrowth in the spring. I like using a rotary mower best, or good flails that don't pull up the plants.

"For weed control we depend on a Clemens, a hoe plow, the Spanish David machine with a plow and a knife, and a Kimco with various rotary heads. The soil structure within each vineyard determines which type of machine we will use.

"It is fascinating to follow the changes in soil structure that occur when you farm organically. Alan York, an agricultural consultant who is very versed in bio-intensive farming, used a probe in various sections of our vineyard and demonstrated how easily the probe entered to good depths in the organically-farmed areas, as opposed to the hard-pack of more conventionally-farmed sections.

"When you start comparing costs of farming organically with other systems of farming, you are really talking about commitment. Our vineyards look beautiful, and we know that if we're going to address the factors of fertility, biodiversity, habitat, and quality grapes, we're going to pay more per acre at the front end than conventional farming.

"My estimate is that it would cost $200 to $500 per acre to initiate organic farming. The beginning is more expensive, because everything is out of balance, and you must take measures to correct imbalance and establish a strategy to resolve specific problems.

"People get nervous about moving into organic farming, but since it forces the grower to increase monitoring, problems can be identified faster. Someone considering changing from conventional to organic farming has to change his mind-set and not be guided by past practices.

"The formula for success is to limit risk; start with the easiest block and appraise the potential problems. Then work to improve soil fertility and biodiversity in the vineyard.

"Once the system is established, the cost holds steady at about an additional $200 per acre per year, and much of that is for weed control," Bartolucci adds.

Benefits of organic/sustainable agriculture

These growers believe the benefits of organic or sustainable farming practices, particularly the use of cover crops, outweigh their increased cost. They point to erosion control, weed suppression, incorporation of organic matter, improved microbial activity, increased soil fertility, improved soil structure, habitat for beneficial insects, and the soil's improved water and air holding capacity. In addition, with cover crops, they can work in the vineyards during the wet season.

Jim Fetzer sums it up for all these growers, "Although organic and biodynamic farming practices are more expensive than conventional, at Ceágo, we believe it is the direction of the future for higher quality, sustainability, and protection of our environment." ■

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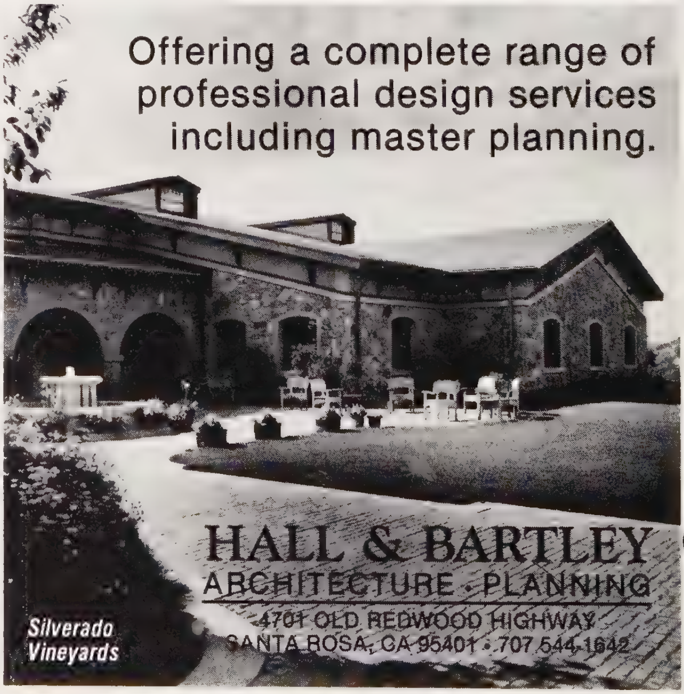

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Biologically Integrated Farming System

implemented in Lodi-Woodbridge

by Greg Belloni

As pesticide residue regulations tighten and consumer scrutiny of environmental issues increases, winegrape growers are searching for ways to reduce use of manufactured pesticides and chemicals on grapevines while maintaining grape quality.

Through a program that places greater emphasis on the overall management of vineyards, the Lodi-Woodbridge Winegrape Commission (LWWC) is helping growers in its district curtail use of pesticides and herbicides through its Biologically Integrated Farming System (BIFS).

BIFS is a long-term approach to growing winegrapes using a combination of farming techniques (biological, cultural, and chemical) that optimizes production of quality winegrapes and minimizes economic, environmental, and health risks. The Lodi-Woodbridge BIFS program was officially established in 1995 through a grant from the U.S. Environmental Protection Agency (U.S. EPA) and the California Department of Pesticide Regulation (DPR).

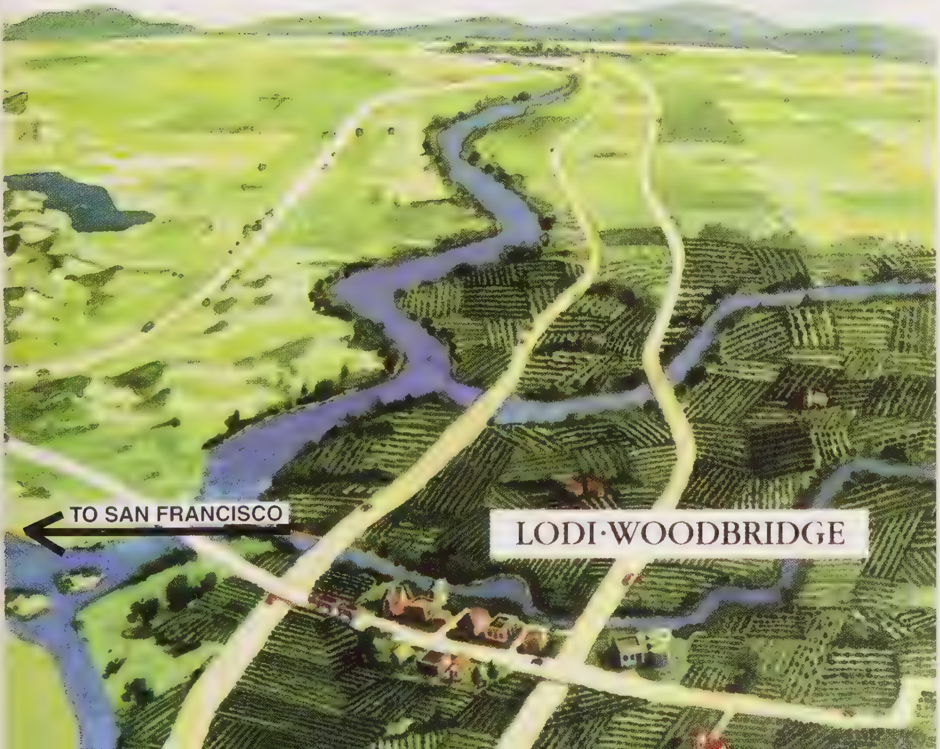
Intergrated Pest Management (IPM) has long been a part of Lodi-area grapegrower practices and a part of the commission's overall mission. The grant provided funds for the LWWC to expand the program and move toward its goal of district-wide implementation.

However, according to Cliff Ohmart, the commission's research/IPM director, the first phase in the program is to get all 650 Lodi-Woodbridge Winegrape Commission growers in the BIFS mind set. "Growers must first realize that BIFS is a whole-farm strategy for growing winegrapes not just a pest management strategy," he explains.

The commission has developed a detailed BIFS program to help familiarize growers and pest control advisors (PCAs) with integrated farming. "The first stage of the program consists of grower outreach." Ohmart says. "We bring quality researchers to our audience to present ideas that are beyond the range of what most of California's growers are used to hearing."

There are five components in the first phase:

- *Monthly breakfast meetings,* held between October and May, serve as a forum for integrated farming experts to present information specific to Lodi vineyards. Generally, these meetings are attended by 70 to 80 growers and PCAs.
- *Half-day research seminars* are held twice each year. Host researchers discuss the latest results from their projects, some of which are funded by the LWWC research committee. Attendance at these meetings is usually 150 to 200 growers and PCAs.
- *Field days* are held once or twice during the growing season which are hands-on events providing leafhopper- or mite-monitoring strategies at a BIFS demonstration vineyard.
- *Neighborhood grower meetings* are the commission's latest addition to the program and have proven to be very effective. The idea behind these meetings is for a grower to invite 10 to 15 neighbors to his/her home for an informal, small group meeting so that there is greater interaction. Ohmart and Paul



Verdegaal, the UC Cooperative Extension Viticulture farm advisor for the Lodi area, speak on a BIFS topic. During the first 18 months of the meetings, more than 360 growers, PCAs, and farm advisors attended at least one meeting.

- The LWWC publishes a bi-monthly *Integrated Pest Management Newsletter* to supplement the meetings. The newsletter includes the latest BIFS information, new strategies, and meeting announcements for growers.

"The grower outreach phase is fundamental to the program," says Mark Chandler, LWWC executive director. "Without the education that the meetings provide, we would have had a difficult time getting growers as involved as they are."

The core of the implementation phase is a group of growers who have agreed to place one or more of their vineyards in the BIFS program. Another important group in this phase are the PCAs who monitor these vineyards. Monitoring is the single most important aspect of the BIFS program, according to Ohmart.

"The vineyards are monitored weekly because it is important to keep on top of what is happening out there," Ohmart says. "Implementing BIFS is dependent on grower/PCA interaction — the more they talk, the better each understands the needs and possible BIFS management options for a vineyard." The LWWC has developed a computerized system to make monitoring and data gathering easier. Ohmart and his staff input the numbers on a data sheet and then input them into the computer. They give the data to growers and PCAs who follow the reports to see what needs to be done in the vineyard.

With information from the data sheets, Ohmart works with growers and PCAs to implement as many BIFS applicable strategies as possible for each participating vineyard. These vineyards serve as examples for others to visit and observe the results of various BIFS strategies.

There are currently 56 vineyards (almost 3,000 acres) serving as BIFS demonstration sites in the Lodi area. Of these vineyards, 19 are planted to Zinfandel, 12 to Cabernet Sauvignon, 11 to Chardonnay, six to Merlot, three to Sauvignon Blanc, and one each of Carignane, Chenin Blanc, Muscat, French Colombard, and Syrah. These vineyards use techniques such as cover cropping, leaf pulling, drip irrigation, and composting as alternatives to traditional vineyard management practices.

One of the first demonstration vineyards in the Lodi-Woodbridge BIFS program was the Twin Oaks Vineyard owned by the Lange Twins and Robert Mondavi Winery-Woodbridge. The 120-acre Cabernet Sauvignon vineyard has served as a prototype for the program as well as the Langes' own operation. "We have implemented BIFS techniques on this vineyard and have applied what we learn here to the rest of our vineyards," says Randy Lange. Randy and brother Brad own and operate Lange Twins. "We see how certain techniques work here and decide which could work best in other vineyards. We are constantly trying new ideas, such as electro-static spraying in vineyards to further reduce chemicals."

Twin Oaks Vineyard frequently serves as a study site for field day research groups and other tours, where growers can learn more about BIFS and how the techniques affect vines and fruit.

The Langes use various BIFS techniques on the Cabernet Sauvignon vineyard, a 60-acre Chardonnay block, and also on Burger, Chenin Blanc, French Colombard, Merlot, Sauvignon Blanc, Sangiovese, Syrah, Viognier, and Zinfandel. "As we learn more of what can be done with all the different varieties, we add more BIFS techniques with the goal of attaining at some future date, the operation completely converted to BIFS-type farming," says Lange.

Application of BIFS techniques in the Twin Oaks Vineyard began with seeding of native grasses (various seed mixes of two or more: Idaho fescue, Molate fescue, Pine bluegrass, and California barley) between every vine row. The Langes' goals of cover cropping include soil improvement, dust reduction, and creation of a refuge for predators and parasites that help control vineyard pests such as leafhoppers and spider mites.

During the winter months, pruning and trellis repair are done. Through weekly monitoring and data sheet reports, Lange decides when and to what extent to apply herbicide contact spray (Roundup) to keep weeds to a minimum. "We have learned over the past five years that contact-only spraying results in weed selection germination — which means we end up spraying three to six times each year contact-only because of the different germination times of each weed type. We are beginning to do alternate pre-emergent spraying — attempting to put at least one year of contact spraying between a pre-emergent spray. Twin Oaks Vineyard does not receive any pre-emergent materials."

In March and April, the cover crop is mowed to minimize risk of frost damage to buds on the vines. Another important aspect of vineyard management during this time is a mildew program. Lange stresses the importance of keeping mildew out of the vineyard and asserts that the application of sulfur to control mildew plus the use of Rally or Rubigan or other sterol inhibitors is one thing he cannot sacrifice. "In 1998, we are planning to use the University of California Powdery Mildew Model for data gathering only," notes Lange. Learning how to

> "Growers must first realize that BIFS is a whole-farm strategy for growing winegrapes not just a pest management strategy."
>
> Cliff Ohmart

apply the program and correlating the information for application scheduling will be done this year with scheduling activity next year.

In May, Lange removes weak shoots, sprays Roundup to minimize weeds under vines, begins drip irrigation, and pulls leaves. Leaves are removed by hand on one side of the vine to control mite and leaf hopper populations; to reduce mildew, and bunch rot risks, and to improve fruit quality. Monitoring is especially important during this period, and Lange asks for the help of not only his PCA, but of all his vineyard workers. "We don't expect everyone to know exactly what the problems are, but we just want them to realize when something is happening," Lange explains. "When our employees spot something out of the ordinary, they contact me by radio and I get out there immediately."

When there is an increasing population of mites or leaf hoppers, Lange relies upon monitoring to help calculate economic thresholds and which will be harder to financially endure, the cost of more chemicals or lower yields. "We generally try not to spray, but if pest populations get too out of control, we just have to do it," he says.

"The whole idea behind BIFS is to manage the vineyard with less synthetic materials," Lange adds. "With modern techniques we look to use less input on the vines. We are attempting to take new technology: electro-static spraying, computer-aided chemical injecting systems, more accurate metering, and possibly GPS spraying to accomplish pinpoint spraying."

Larry Mettler applies many of the same BIFS practices on the 800-acre Arbor Vineyards in the Lodi area. Mettler has had two vineyards planted to Cabernet Sauvignon and Merlot in the BIFS program for two years. "We have to get in a mind set to tolerate pests, such as spider mites and leaf hoppers, to a certain extent and let natural predators, such as parasites take care of what chemicals have traditionally done," Mettler says. "If we can keep our yields and quality up without using synthetic materials, we are going in the right direction."

Mettler has adopted BIFS techniques to Chardonnay and Zinfandel also with good results, but cautioned that different grape varieties respond differently to BIFS techniques. "The time frame to learn and to get results may vary. You must pick and choose the best BIFS techniques for each vineyard.

"LWWC is doing a great job educating growers about BIFS and IPM. The more progressive growers are always going to be on top of things, but less aggressive growers are the ones that the commission is really getting the BIFS message out to, and that is great for everyone."

Mettler believes growers are sincere in their sharing of information. "We all try to share information we have with others to help them get involved with BIFS," he says. "I can tell a neighbor, 'Hey, I tried this in one of my vineyards and it might work well in yours, too.'"

Chandler echoes this belief, "We have a sincere effort from growers to help in the education process — they are aware that they are setting an example for the next generation of growers and are responsible for leading the industry toward cleaner farming practices."

Chandler notes that Lodi's progress is important because of the tighter regulations on the horizon with the passing of the Food Quality Protection Act which will substantially limit the types of chemicals used on crops, particularly organic phosphates and carbamates. "Growers will be looking for ways to reduce chemical applications while maintaining quality. The BIFS program has our growers already headed in that direction."

Another benefit of BIFS is that growers can move at their own pace. "That is what is so powerful about BIFS and IPM," Ohmart explains. "They may start cover-cropping one season, then add something else the next."

As growers move toward BIFS, they can be confident that their fruit quality will not suffer. "There are no negative effects regarding quality — in fact we have seen marked quality improvement from practices such as leaf pulling," Ohmart notes.

Mike Vail, viticulturist for Vino Farms, agrees with Ohmart. "We've been using BIFS techniques since the early 1990s and have always grown the highest fruit quality possible," Vail said. "BIFS isn't totally about improving fruit quality, but that's definitely part of it."

Vino Farms has 38 acres of Sauvignon Blanc and 39 acres of Cabernet Sauvignon in the BIFS program. Vail reports that BIFS techniques are used on all of Vino's other vineyards. "We've been using integrated farming techniques on our vineyards since the early 1990s — even before the LWWC program."

BIFS techniques used at Vino Farms include monitoring soil moisture levels with neutron probes. There are one or two neutron probe holes in each block regardless of vineyard size and each site is monitored weekly during the growing season. "The neutron probe helps us determine how much water is in reserve for the vines and when and how much we should drip irrigate," he explains. Yield to pruning ratios are recorded at Vino Farms, and soil and vine nutrition is also monitored.

Vail emphasizes the importance of monitoring above all. "Watching what happens in the vineyards is most important," he explains. "We monitor at least twice each week to follow the progression of events during the season. If we didn't do this, we would miss subtle vineyard changes."

Ohmart also stresses the importance of monitoring to BIFS. "We want growers and PCAs to observe their vineyards and use monitoring reports to decide on appropriate actions needed. Waiting to spray when the numbers say it is necessary not only saves growers spraying costs, but also helps keep chemical levels low," he said. "Getting that message to growers is the most important part of our program."

As Lodi-Woodbridge growers continue to get the BIFS message, the LWWC hopes to continue toward district-wide implementation. "More and more growers are seeing that BIFS is more of a vineyard management practice than just environmentally-friendly pest management," says Chandler.

Communicating that BIFS does not impact quality or raise costs should enhance grower interest in the program and move a greater percentage of vineyards into the program. "As more and more people get the message and try techniques on their vineyards, the closer we get to the ultimate goal of our program — the reduction of pesticides and other synthetic materials used in our vineyards," Chandler concludes. ■

SANGIOVESE EXPERIENCES EXPONENTIAL GROWTH

by Eleanor & Ray Heald

Sangiovese, Tuscany's principal grape variety, has experienced exponential growth in the U.S. in the 1990s. According to latest Wine Institute figures, acreage was up 66% between 1995 and 1996 alone.

Jon Moramarco, president of The Wine Alliance, whose Atlas Peak Vineyards in Napa, CA, is among the largest California Sangiovese producers, estimates there are about 70 U.S. producers and 1,400 planted acres. "It is not a stretch to call Sangiovese one of California's noble varietals," he declares.

While the majority of the producers are in California, growers and winemakers in other states, such as Washington and New Mexico, are also interested.

In Italy, Sangiovese is most important in the production of Chianti Classico, Vino Nobile di Montepulciano, Brunello di Montalcino, Carmignano, Pomino, and Super Tuscan wines, which are a modern innovation.

But winemakers interviewed for this *PWV*-varietal review point to a California- style Sangiovese that is different from any Italian Sangiovese. Most are relatively new to making this wine, and vineyards where their grapes are sourced are young. While the winemakers are enthusiastic about Sangiovese, they admit that growing the grapes and producing a great wine from them can be challenging.

Taking on challenges

At the International Sangiovese Symposium held at Atlas Peak Vineyards in 1997, Darrell Corti, director of the wine department at Corti Brothers, Sacramento, CA, quoted Gian Vittorio Soderini, who named the varietal. In 1600, he said, "Watch out for it [Sangiovese], for whoever thinks it produces wine, it gives vinegar."

Modern winemakers from Italy and the U.S. have their problems with Sangiovese, too. They say that Sangiovese in its myriad forms, shows extreme sensitivity to changes in altitude, climate, and soil. The varietal is spring frost-sensitive and in climates with cold winters can experience significant bud mortality. Grown on fertile soil, it is overly vigorous.

Cesare Intrieri, University of Bologna Director of Viticulture at the Center of Viticulture & Enology Research, says Sangiovese is also sensitive to excess light. "The best training and trellising system for Sangiovese is a spur-pruned cordon, one or two buds per spur. This system (1m² of leaves per Kg of fruit) gives the best ratio of leaves to clusters, insuring ripening."

He also suggests the need for careful leaf pulling because when fruit is completely exposed, the accumulation of polyphenols is reduced and in turn

Tularosa Vineyards
David & Chris Wickham, winemakers
Tularosa Vineyards, Tularosa, NM

LA FAMIGLIA DI ROBERT MONDAVI
Jim Moore, assistant winemaker
Robert Mondavi Winery,
Oakville, CA

CHARLES KRUG PETER MONDAVI FAMILY
John Moynier & Jac Cole
winemakers
Charles Krug,
St. Helena, CA

VENEZIA WINERY
Chris Munsell,
assistant winemaker
Venezia, Geyserville, CA

David Munksgard, winema
Iron Horse Vineyards,
Sebastopol, CA

ORFILA VINEYARDS
Leon Santoro, winemaker
Orfila Vineyards, Escondido, CA

Monte Volpe
Gregory Graziano, winemaker
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Dave Guffy, winemaker
Cambria Winery & Vineyard,
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AMADOR FOOTHILL
WINERY
Katie Quinn, winemaker
Amador Foothill Winery,
Plymouth, CA

Shenandoah
Vineyards
Leon & Paul Sobon, winemakers
Shenandoah Vineyard,
Plymouth, CA

Bonterra
Robert Blue, winemaker
Bonterra Vineyards,
Hopland, CA

MONTEVINA
Jeff Meyers, winemaker
Montevina, Plymouth, CA

MOUNT PALOMAR WINERY
Etienne Cowper,
winemaker
Mount Palomar Winery,
Temecula, CA

drops color pigments. Moramarco estimates that it will take California grapegrowers possibly 20 years to determine the nature of Sangiovese and where it grows best.

Corti reports, "There are more than 34 recognized or identified clones and, within Italy, some 40 or more synonyms for Sangiovese. The varietal form is recognized as both grosso (big) and piccolo (small)."

UC-Davis professor Carole Meredith, Ph.D., has fingerprinted the DNA from 12 recognized Italian Sangiovese clones. She indicates that 11 are obviously Sangiovese, but one is slightly different and may be another variety.

Some criticisms

While Italian producers have many good things to say about California Sangiovese, Renzo Cotarella, director of Enology for Marchesi Antinori, suggests "In California, Sangiovese starts very soft; the acidity is lower, and the pH higher. There's more roundness and it finishes too soon."

Roberto Stucchi Prinetti, general manager of his family's estate Tenuta di Coltibuono, cites a "different fruit character" in California Sangiovese from that grown in Tuscany. "The California wines I've tasted are more jammy but are not as concentrated as Tuscan Sangiovese."

Paolo di Marchi, owner/winemaker at his family's Chianti Classico estate Isole e Olena, believes that Sangiovese is promising for California, but rejects preconceived ideas of how the wines should taste. "Sangiovese shows individuality, depending on how and where it is grown." He adds, however, that California Sangiovese has "more oak and richer, plummy, thicker fruit."

In di Marchi's opinion, Sangiovese needs hillside locations. "Bottom of hills are not good because erosion has caused the accumulation of clay there. Clones are not the first priority. Soils and exposure with the correct viticultural techniques are much more important."

While vertical shoot positioning (VSP) is not traditional in Tuscany, it is preferred for Sangiovese at Isole e Olena.

In Italy in the past, it was believed that Sangiovese needed a blending partner to tame its rustic qualities and lend some breeding. Since the 18th century, Carmignano has had up to 10% Cabernet Sauvignon in the blend. In the modern era, Super Tuscans have also been blended with Cabernet Sauvignon.

However, Tuscan winemakers at the Sangiovese Symposium endorsed Merlot, Syrah, or Zinfandel as better blending varietals. They believe Cabernet Sauvignon tends to dominate. "A good vintner prefers not to blend," di Marchi comments. "Today, 100% varietal wines are being produced in both the U.S. and Italy."

Why has this grape, with all its problems, become the darling of red winemaking in the U.S., ranking seventh in worldwide planting behind Cabernet Sauvignon?

When grown in the right place, Sangiovese is disease resistant and excess vigor is controlled. Most important: it makes delicious wine with a unique personality, generous color, aroma, and structure.

Best descriptors

When considering descriptors for Sangiovese, Leon Sobon, owner of Sobon Estate and Shenandoah Vineyards in Amador County, says the primary aroma and flavor are cherry. Amador Foothill Winery's Katie Quinn adds spiciness, which is not as forward as in Zinfandel, but noticeable. She has not yet determined whether this character is soil or clonal-influenced.

Quinn contends that floral aromas also develop with ageing, but John Moynier (Charles Krug Winery) notices violet and floral characters immediately after fermentation. They disappear after malolactic fermentation (MLF), he notes, but come back during barrel ageing and end up as dried rose petal.

Jeff Meyers (Montevina) adds strawberry to cherry and agrees with spice. In bigger vintages, smoky, tarry elements are noticeable in an overall richer wine.

In Mendocino County, says Greg Graziano (Monte Volpe Vineyard), fruit comes in very ripe. It showcases more black fruits, such as boysenberry and blackberry, with less red fruits.

Sourcing for Robert Mondavi Winery is principally Napa Valley, but some grapes come from Mendocino, Santa Clara County near Gilroy, and Monterey County's King City area. Jim Moore finds the Monterey grapes unique with stereotypical vegetal character, but not as severe as some of the Cabernet Sauvignon from the region. This fruit requires significant hang time to get beyond the vegetal-herbal stage.

Dave Guffy sources Cambria Winery Sangiovese from cool, Region I Santa Maria Valley. A wild cherry character lends itself to the wine's lively acidity, he says, even though grapes are picked very ripe at 25° Brix. Guffy thinks the quintessential descriptor for Sangiovese, independent of growing region or continent, is red licorice, which is a striking element in the Cambria bottling.

John Falcone, winemaker at Atlas Peak Vineyards, summarizes the differences he sees between Tuscan Sangiovese and its U.S. counterpart. "Tuscan producers battle rain in many vintages in attempts to ripen grapes. In such vintages, their wine tends to be less fruity and more austere. California's generous weather allows picking in our vineyards at 23° to 24° Brix or higher. These wines are much more approachable and fruitier early on.

"After four to five years in the bottle, California and Tuscany Sangiovese are more alike because some of the perky fruitiness of California bottlings diminishes and spicy notes and barrel/bottle age-tones emerge."

Acidity factors

Falcone says that high acidity problems experienced by Italian producers are diminished by ripeness levels achieved in California. He states that typically at 23° Brix, high- to mid-0.7 TA is the norm. After fermentation and barrel ageing, TA is 0.6 or less.

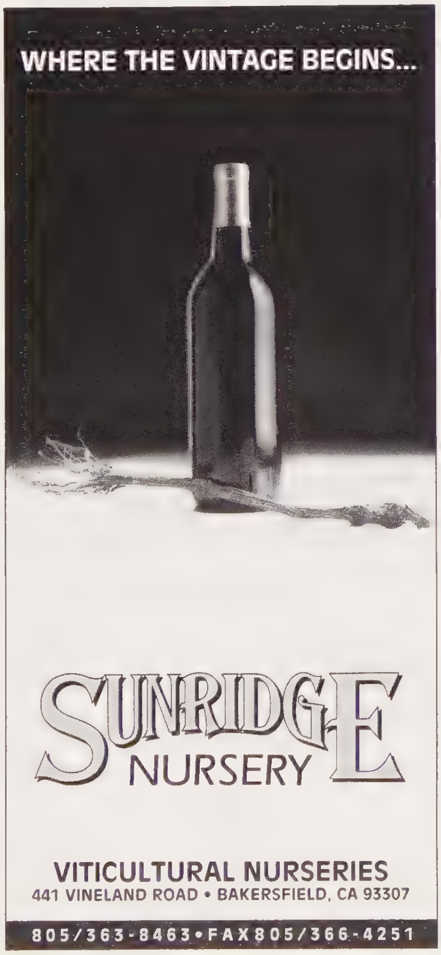
Moynier has found that fruit grown in St. Helena has ripe fruit flavors at around 24° Brix but also has lower acids. He routinely adds 4 to 8 lbs tartaric acid per 1,000 gallons after MLF completes to raise the TA to 0.58.

Quinn adds acid early on in the fermentation whether fruit is picked at 23° or 25° Brix. The problem has been drastic pH shifts in the fermenting wine — in one vintage to over 4.0. This has been handled by frequent monitoring of pH and acidity, with acid additions. "I do juice samples every year, trying to learn if it's a K^+ problem or something else and have come to no conclusions," she maintains.

Sobon indicates that he believes that cropping levels have a lot to do with low acid problems. "I normally pick at 23.5° to 24° Brix with acid 0.8 to 0.9 TA, but at two tons per acre (eight pounds per vine)."

Graziano states a different problem in Mendocino County. He's cropping about five TPA and picking at 25° Brix with pH between 3.0 and 3.2. Acids are 0.95 to 1.0. Routinely, the wine is bottled with about 0.85 TA. MLF hardly changes acidity because acids are principally tartaric. "This higher acid sets a style that reminds us a little more of Italy," he notes.

In the cooler Santa Maria Valley,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Guffy is attempting to maintain crop levels at 13 to 15 lbs per vine to bring acidity levels down.

Bob Blue (Bonterra) considers site and sun exposure important for balanced acidity. The winery's south-facing, low-fertility Sangiovese vineyard is in Hopland, CA. Grapes are picked between 0.75 and 0.8 TA with 3.2 pH. The finished wine is 0.62 TA with 3.35 pH. Crop load is 15 lbs per vine.

David Munksgard, winemaker, reports that all Iron Horse Sangiovese is sourced from two blocks at T-T ranch in Alexander Valley. Both blocks have the same clone at about the same elevation, but one is on a hillside with extreme slopes. The steeper site yields dramatically better fruit.

After MLF, Iron Horse Sangiovese still has higher than desired acid. For this reason, the winery chose to blend with 12.5% Merlot and 12.5% Cabernet Sauvignon in 1994. In 1995, the blending varietals were 15% Cabernet Sauvignon and 5% high-press fraction Chardonnay.

Plant material and site

Graziano sees little difference among clonal materials planted in California.

Robert Mondavi Winery has its own dedicated clonal trials (two certified UCD clones and one field selection) in Napa Valley. Five years of data show consistent differences among the clones in different sites. "What has been most notable is the site-specific response of the vine first and clonal selection second," reports Jim Moore.

"Everything about crafting a wine stems from defining a Platonic ideal of what a winemaker would like the wine to be," Moore continues. "That works backwards to vineyard site selection. Everything that's accomplished supports the goal envisioned from the outset. It should not be a 'Let's stick something in the ground and see what we get' attitude."

Montevina believes it is working with four different clones and seven to eight clonal selections. What Meyers has seen is not difference among clones, but in their reaction to different sites. "Where you plant is probably more important than what you plant," he maintains. "A reasonably good clone planted in the right spot leaves you in good shape.

"I also wish I knew how to identify that right spot better. Right now, I'd have to say plant Sangiovese in the worst piece of land you've got. Any soil depth or fertility blows the berries up like balloons."

At Atlas Peak, there's only one clonal selection from Antinori in Tuscany. The grapevines that are used in the Reserve bottling are planted in rocky, volcanic soils on steep, hillside, rocky slopes. The vines are self-regulating with only minimal thinning and yields of 4lbs per vine. Closer to the valley floor, even where soils are still quite rocky, vines require more labor, such as dropping fruit post-veraison to get crop balanced at 12 to 14lbs per vine with clusters of uniform ripeness which are used in the Sangiovese varietal bottling. "Site is the

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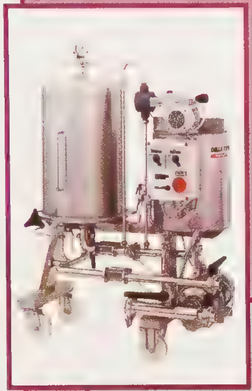

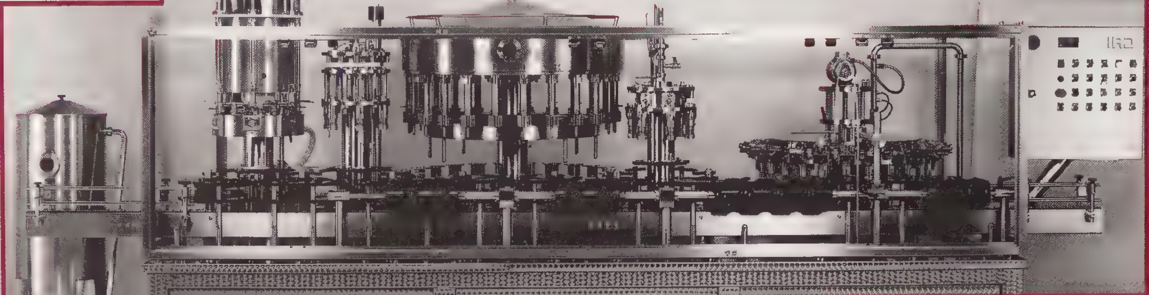

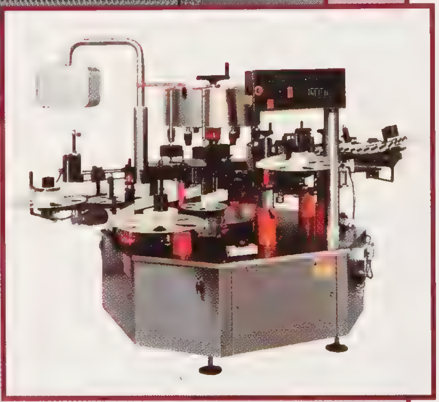

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most important element for Sangiovese," Falcone reiterates.

Many of the Atlas Peak vines are trellised on an open lyre and are drip-irrigated. At the highest elevations, pruning weights are small as vines are devigorated on their own. If anything, Falcone would like to see an increase in vine vigor at higher elevations to insure a healthy canopy.

Since 1992, Atlas Peak has made a Reserve Sangiovese. The grapes for the Reserve come from two blocks at an elevation up to 1,800 feet with the rockiest soil facing directly southwest. In Falcone's opinion, this is proof that site determines quality.

At Orfila Vineyard, the Reserve Sangiovese is always sourced from hillside vineyards in the coastal region north of San Diego, about 15 miles from the Pacific Ocean. But Leon Santoro believes clonal selection is most important.

Orfila's first plantings were from a Napa Valley clonal selection. In 1993, it made a light, thin, tart wine. In 1994, a second Napa Valley clonal selection with smaller berries was planted and, in 1995, a Tuscan clonal selection. "I don't have scientific data to prove anything, but I know that if I had not planted the Tuscan clonal selection, I would not be here talking about Sangiovese," Santoro reports.

Salva has generalized for some time that a good red Zinfandel site makes a good Sangiovese site. While Meyers agrees, he adds that Sangiovese still needs more vineyard manipulation — such as removal of double clusters off spurs, deciding to drop crop early after set or post-veraison or a combination of both, and leaf pulling on the vine's cool side. At Montevina, Sangiovese is on bilateral cordon.

Training, trellis, and rootstocks

"Because Sangiovese is a very fruitful variety on a per bud basis, it needs to be spur-pruned," Salva emphasizes. "As buds get further out on a cane, they become more fruitful resulting in inferior wine in terms of color pigmentation and flavor profile."

In an effort to reduce vigor, the vines at Cambria have been cordon-trained and spur-pruned with two kicker canes. However, after experimentation, Cambria is going toward just spur-pruning with no kicker canes. This gives better cluster position for exposure. Canopy issues will be controlled through leaf pulling and possible hedging. Clusters will be thinned at verasion for uniformity.

In the Temecula Valley, Mount Palomar Winery has chosen a similar system with 10 two-bud spurs per vine and no kicker canes, winemaker Etienne Cowper reports.

At Tularosa Vineyards in New Mexico, winemakers David and Chris Wickham utilize spur and cordon. The trellis is a single wire with one wind wire.

Geyser Peak (Geyserville, CA), has multiple sources for its Venezia brand Sangiovese bottlings. Using Geneva Double Curtain (GDC) in a Region I Russian River Valley vineyard has been successful for better fruit exposure at a cooler site.

Monte Volpe's Sangiovese is all planted on 5C rootstock in relatively shallow, hillside parcels. With this rootstock, monitored irrigation is needed throughout the growing season. "When we want to stress the vines to ripen fruit (past 22° Brix), we shut off the water," Graziano explains.

At Montevina, rootstock is 5C plus a number of other devigorating types. Montevina irrigates because, by mid-August without water, vines would have yellowed or have no leaves. The tricky part Meyers notes is "when to cut off the water to get fruit ripe with as little swelling of the berries as possible."

Charles Krug Sangiovese is sourced from an estate site in St. Helena. Soil is deep and fertile. Rootstock is St. George. No fruit thinning is done and the only manipulation is leaf pulling on the morning side. These vines were T-budded from Semillon and are not irrigated.

Salva says intentional over-cropping has been tried at Atlas Peak, following the practice the Australians call minimal pruning. The vines are spur-pruned with two to four 10-bud canes left per vine. The vine is allowed to develop many clusters, and each cluster thereby becomes smaller. After berry set, all canes are pruned off, eliminating a majority of the clusters. "Unfortunately, we never documented our experiment for fewer berries/cluster, fewer seeds/berry, smaller berry weight," Salva reports. "But judging visually, I think the practice has merit."

Yields

At Amador Foothill Winery, yields are 2.5 to 4 TPA on a divided canopy.

Mondavi's target is 1,000 vines per acre spacing and cropping about 5.5 TPA. Moore explains that some Sangiovese vines produce huge ¾-lb clusters making cropping in pounds per vine "unworkable" in any tighter spacing with certified clones, given Sangiovese's vigor and fruitfulness.

In considering yields, Atlas Peak's Glen Salva prefers standardizing to pounds per vine. "Jim Moore states 5 TPA, but in reality that's 10lbs per vine given the 1,000 vines/acre spacing. If Shenandoah is 2 TPA, but only 500 vines/acre, that's 8lbs per vine."

Harvest call

Sangiovese's uniqueness requires optimizing and synthesizing many factors to get them in balance for harvest, Moore contends. "Whether this is yield, perceived ripeness, Brix, acid, pH, must analysis, or other essentials, our orientation is to insure that they all converge as closely as possible. On the Napa Valley floor, we're trying to reduce the extremes of very low pH/high acid or high pH/low acid with an optimal sugar window of 23.5° to 24.5° Brix."

This target window is an acceptable goal for all producers interviewed. They believe that if this window is exceeded, the fruit goes too far into the stewed fruit, prune zone where Sangiovese's berry, cherry, and plum qualities are lost. Below the window, sour cherry and underripe berry characters are accentuated.

Blending varietals

Moore also notes that the suggested sugar window offers optimal compatibility with blending varietals. He particularly likes to use Zinfandel. It fills out the wine, creating a better mouthfeel. At Mondavi, there has been a philosophical preference not to use Bordeaux varietals, however the 1996 Napa Valley blend was predominately Sangiovese at 85% blended with about 15% Merlot.

Graziano attempts to produce a 100% varietal wine but has blended in small amounts of other red Italian varietals. Similarly, Montevina has blended with Zinfandel but now prefers the interesting complementary components of

Barbera. "Particularly coming from Amador County, where it is warmer and we tend to get lower acid and higher pH, blending with Barbera, which is just the opposite [high acid and low pH], is ideal," Meyers explains.

For Bonterra Sangiovese, the goal is also 100% varietal.

Santoro admits that with the early bottlings of Orfila Sangiovese, he fell into the "Cabernet trap." After using Merlot in 1994, he does not care for it either and is pursuing the 100% varietal route.

Cowper has used 3% to 4% Cinsault. "Sangiovese seems to improve with just a little of some other varietal," he maintains. "However, by focusing more on the viticultural end, we're getting better color and body today. We project that 100% varietal may be possible in the future."

"In general," Moore remarks, "like most California producers, Mondavi is working with young vineyards that are barely established." Blue adds, "It's a time of discovery."

In the cellar

Preferred Sangiovese winemaking practices include destemming; cold soaking; low-pressure pressing; including some whole berries; and cap irrigation rather than punchdown.

Geyser Peak which has the option of using rotary fermentors does not use them for Venezia Sangiovese. The roto-tanks are 20-ton capacity, and no Sangiovese source provides that much fruit. Small upright, eight-ton fermentors are used, and this practice is similar at other wineries with some, such as Shenandoah, fermenting one-ton batches in 4x4 bins which are hand-punched.

Sobon prefers peak juice temperature to be under 90°F and achieves this in small bins with a higher percentage of whole berries (up to 30% to 40%).

In 1996, Munksgard changed the Iron Horse Sangiovese style. He now employs a seven-day cold soak. After the third day, a percentage of juice is drawn off for a Rosato di Sangiovese wine. Juice is then warmed and inoculated. Peak fermentation temperature reaches 75°F.

At 5° Brix, wine is transferred to barrel to complete fermentation. Both the cold soak and going to barrel early helped mitigate a high acidity perception in the wine.

Meyers draws off 10% to 15% of the juice after crushing to increase the juice to skins ratio. There's a similar practice used in Venezia production, but wine does not go to barrel before fermentation completes.

Falcone would only employ the practice of drawing off juice in a "poor quality vintage."

Graziano would not draw off juice because his fruit has high levels of tannin, but he likes the color improvement from a five-day cold soak, at 50°F with no SO_2. He allows both uninoculated and inoculated fermentations after that.

Tannin management

Guffy practices pseudo-cold soak for three days (no yeast inoculation) and post-fermentation maceration of 10 to

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14 days to allow tannins to polymerize for optimal mouthfeel without fining.

"This is where you really have to know your fruit source," Falcone adds. "Climate directs tannins. The later you can pick, the softer the tannins will be. If the wine is medium bodied and quite tannic because it comes from a warmer climate, tannins need to be manipulated in the cellar with fining."

In vintage 1996, Quinn did extended maceration (19 days total skin contact) for the first time and was pleased with the overall result of softer tannins.

Barrel regimes

Aware that Sangiovese's delicate nature makes it overly sensitive to new oak, Venezia is increasing its puncheon inventory. The goal is 15% new French oak in an all-puncheon ageing regime over the next five to seven years.

Atlas Peak uses 40% puncheons, 10% 2,000 to 3,000gal uprights, and a balance of 15% new to seven-year-old barrels.

At Bonterra, a model developed for Pinot Noir is followed for Sangiovese. One-year-old French barrels (previously used for Chardonnay fermentation) have one head removed. These are used as open-top fermentors with one lug box of whole berries added to each barrel to better maintain temperature. "You get the oak, but it's mitigated by fermentation and comes across integrated," says Blue.

"That's a key," Graziano agrees. "Dirty to barrel and treating Sangiovese like Pinot Noir." The following practices are employed in the "Riserva" program at Monte Volpe. All cooperage is French oak, heavy-toast, tight-grained Burgundy barrels; 50% are new and the remainder one to five years old. "Wine goes to barrel dirty (with yeast lees), MLF completes in barrel, and the wine does not get over-oaked," Graziano contends. "American oak is far too aggressive for this method. We've done experiments proving that."

Atlas Peak treats its varietal and reserve wine programs differently on the barrel profile. "What must make any reserve program different is the vineyard source of the base wine," Falcone emphasizes. "The reserve must have greater structure, better color, and more aroma and flavor. None of us are making a Reserve Sangiovese just by spending more money on barrels."

The Atlas Peak Reserve is 20% new French oak with MLF completed in barrel and less racking early on in the ageing program.

Moore explains that Mondavi has experimented with everything, especially puncheons and casks. The oak-ageing program and the amount of new oak are just other ways to stylize a wine. Mondavi tends to use even lower percentages of new oak than in their other wines to complement the moderate body of its La Famiglia di Robert Mondavi Sangiovese.

A combination of 225L barrels and 450L puncheons and 2,000L to 10,000L neutral casks are in the program because it is the Mondavi philosophy that "the larger the vessel, the more benign the oak impact and the fruitier the wine."

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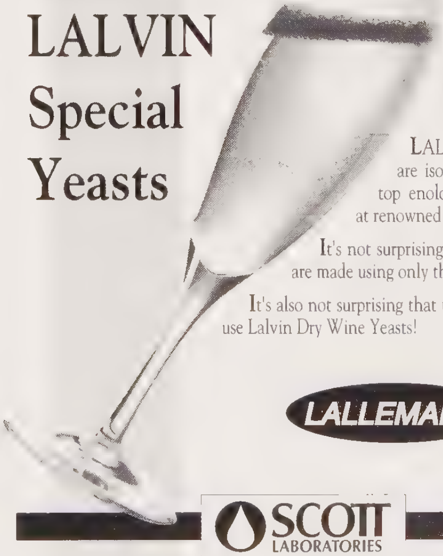

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Mondavi experience shows that at nine to 10 months, 225L barrels begin to dry out forward fruit, making the wine about right for immediate consumption, while larger cooperage maintains more life and vigor in the wine.

Munksgard points to Sangiovese as an oxygen-sponge similar to Pinot Noir. He suggests protected racking unless oxygen is needed to correct other problems.

Optimum drinkability

These winemakers agree that, with respect to maturation, Sangiovese has other parallels with Pinot Noir. It follows a roller coaster pattern, going through bottle shock and tasting poorly for six to nine months after bottling.

Most also agree that Sangiovese requires a minimum of six months bottle age prior to release. If feasible, a year is even better.

Less desirable cranberry and citrus characters show when Sangiovese is young, but after two years in the bottle, it begins to change and showcase its most preferred characteristics.

If the consumer's preference is grasping for fruit, then that person will like Sangiovese young; more mature and developed qualities don't begin to show until the wine has been in the bottle for two years.

Sangiovese, also like Pinot Noir, needs proper storage. It is much more delicate than Cabernet Sauvignon in the first five to seven years of cellar ageing.

Conclusion

Despite its challenges to growers and winemakers, these winemakers agree that Sangiovese promises to be one of the most exciting varietals to explore in the future. ■

PWV thanks Charles Krug Winery for hosting the tasting/discussion.

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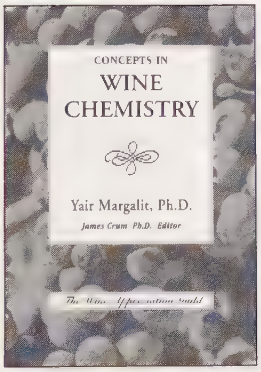

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ON TARGET WITH CAUSE-RELATED MARKETING

by Millie Howie

When any marketing company makes that first client call, there are many questions to be answered. For John Bonick and Vivien Gay, whose full-service marketing agency, The Isosceles Group, specializes in promoting brands to gay and lesbian consumers, the sell is even harder. With their 30 years of combined experience in beverage marketing, sales, and promotions, the two partners feel well-qualified and are establishing an enviable record of successes.

"When I was with Callaway Vineyard & Winery (Temecula, CA), we were very supportive of local gay and lesbian events," recalls Gay. "Then when I moved on to St. Supery Vineyards & Winery (Rutherford, CA), which was a newer operation trying to gain more market presence, there was always strong, generous support for non-profit causes for women, Asians, seniors, and the major gay and lesbian communities in San Francisco, New York, and Santa Fe."

John Bonick's resume includes an early relationship with niche marketing at Piper-Sonoma (Healdsburg, CA), where he prepared advertising for the gay press which brought a positive response.

When people in the beverage industry suggested Bonick and Gay pool their knowledge and experience, the two developed a partnership with a unique and highly individualized approach to marketing to an underserved population.

Why the gay and lesbian market? First, the restaurant community, one of the prime winery targets, has a strong gay and lesbian employee base. Through national surveys and their own demographic studies, Isosceles has ascertained that this segment of the market has tremendous influence and buying power.

The gay and lesbian national population is estimated at between 15 and 25 million. The largest population center is New York; next is the San Francisco Bay Area. Then Los Angeles Metro, Chicago, and Washington DC are followed by Houston, Miami, and Boston. Simmons Market Research reports that 28% have an annual household income over $50,000, and 21% have household incomes of over $100,000. About half of the population is college educated and holds management positions.

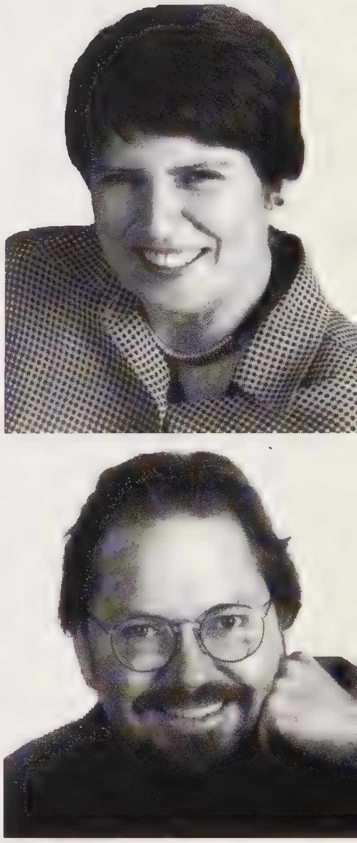
"In the beverage world, liquor companies have always understood this and marketed to this niche," remarks Gay. "Absolut Vodka led the way by buying the back cover in gay and lesbian magazines. Stolichnaya is another major player, Skyy Vodka participates by pouring its product at events. Tanqueray is the major support behind the AIDS Bike Rides held around the U.S. Other spirits producers are also advertising leaders: Johnny Walker, Hennessy, Bombay Sapphire, Bailey's, Miller Beer, Budweiser, and Mumm.

"Wine producers have always been more conservative," she admits, "and also tend to have lower advertising budgets. Now some of the wineries are beginning to recognize the opportunities and benefits of targeted promotion."

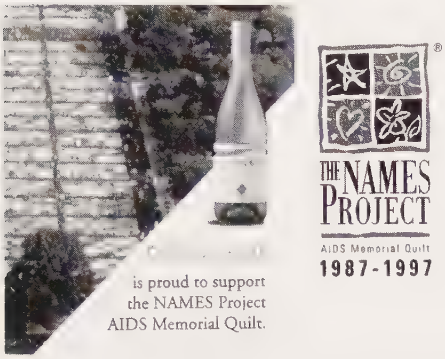
The survey results show that the gay and lesbian community is a remarkably loyal audience, with 88% reporting they would go out of their way to buy products from companies which reach out to them by advertising in the publications they read.

With these statistics to support their recommendations, Gay and Bonick created what they call "cause-related marketing," a combination of product donations, print advertising, and point of sale, all devoted to a specific cause.

THE ISOSCELES GROUP


TOP: VIVIEN GAY
ABOVE: JOHN BONICK

"As a marketing company, we believe in building a loyal consumer foundation for our clients. With our beverage expertise, it was natural for us to work with beverage industry clients to create integrated and on-going programs in this valuable niche market."



is proud to support the NAMES Project AIDS Memorial Quilt.

To introduce clients and potential clients to this base of loyal, influential, and trend-setting consumers, Isosceles has assembled a portfolio containing statistical documentation of the size and importance of the gay market, including reproductions of supporting press notice of successful advertising. "We have built a reputation with the non-profits as a source for winery cooperation in their programs. On the winery side, we are seen as a conduit to reach a different market with integrity," Gay says.

"When we started our company in 1996, I phoned John Calmeyer, the vice president of marketing and public relations at The Wine Alliance, which owns Clos du Bois (Geyserville, CA) and told him what we were planning," recalls Gay. "He immediately recognized the importance of niche marketing, and in positioning Clos du Bois products in the eyes of a group with as much cause awareness as the gay and lesbian communities, which also have the lifestyle and income to enjoy Clos du Bois wines. What we started with Clos du Bois, we continue with all our clients."

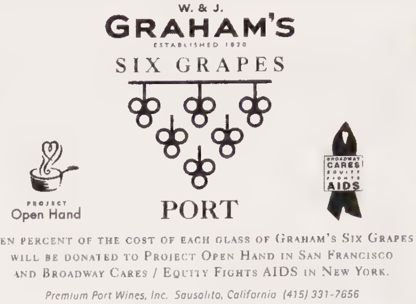
The initial cause-related efforts of Clos du Bois began in October 1997, in conjunction with "A Decade of Remembrance," the tenth anniversary celebration of the NAMES Project AIDS Memorial Quilt. Programs and materials were designed for both on-premise and off-premise venues. The off-premise program offered a $1 donation in the consumer's name to the AIDS Memorial Quilt, when the neck hanger or coupon on a tear-off pad was mailed to a fulfillment center.

Restaurants selling Clos du Bois were provided with embossed table tents which could also be used as menu clip-ons, postcard take-ones, and "cheat sheets" to familiarize staff with the program. For each case of Alexander Valley Selection or Vineyard Designate Clos du Bois wines purchased by a restaurant, the winery made a $6 donation to the NAMES Project.

For Clos du Bois restaurant accounts, the Isosceles Group designed "A Night of Celebration and Remembrance" in June 1998, for key restaurants to participate in key metropolitan markets. On the designated event night, Clos du Bois will continue to contribute $6 per case to the NAMES Project for each case purchased by its restaurant customer. In addition, each restaurant is asked to contribute a fixed percentage-of-check amount to the cause. Point-of-sale support includes easel cards, small table cards, menu clips, and lapel pins.

Clos du Bois advertising appears regularly in *Out*, *Advocate*, *Metro Source*, and *QSF*. The ads and all support materials are printed in full color. In return, the NAMES Project includes mention of Clos du Bois' support in its national and regional publications, and notifies its chapters so announcements can appear in chapter newsletters. Clos du Bois can trace 25 new restaurant accounts in Denver, CO, to its cause-related advertising.

Graham's Six Grapes Port (Sausalito, CA) led by President David Campbell, participates in Project Open Hand in San Francisco and the East Bay, and in Broadway Cares/Equity Fights AIDS in New York. Graham's has been an Isosceles client for two years. The company makes product and cash donations to a number of charities and does two special programs of support every year on an on-going basis.



Ten percent of the cost of each glass of Graham's Six Grapes will be donated to Project Open Hand in San Francisco and Broadway Cares / Equity Fights AIDS in New York.

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In each program, a percentage value of each product sale is set aside for the two prime targets. Isosceles works with Graham's distributors to identify accounts that Gay feels will respond to the program. This year Graham's ads have been carried in *Metro Source* and *Out*. The company reports a high success rate in selling to targeted restaurant accounts, and notes that, where a year ago orders were for half-cases and less, re-orders tend to be for multiple cases now.

Earl Myers is president and CEO, and Jan Wells is vice president of marketing at Cannon Wines Limited (San Francisco), which is Domaine St. George's marketing company. They elected to establish the winery as a major force at "Women's Night in Los Angeles." A schedule of product donations was set for the various activities surrounding the "Night," and an ad created by Jamison, Cawdrey Advertising (San Francisco) was printed as a program insert for the event.

Susan Sokol Blosser, president of Sokol Blosser Winery (Dundee, OR), recognizes the growth potential of cause-related marketing. But as a small winery with virtually no marketing budget, she is limited in the extent of her commitment. She is starting with well-considered donations and tastings for carefully selected groups. In June, she will be appearing as a guest speaker before the San Francisco Women's Group to present her wines and discuss what it takes to run a successful winery.

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Participation by the Firesteed brand, which has a line of Oregon wines, grew out of Isosceles' relationship with the parent company, Ramlösa Water, through American Wine & Spirits importer and Firesteed's President Howard Rossbach.

"A year ago Howard Rossbach came to us and asked for our help in enlarging distribution of the water," Gay reports. "We started with product donations, and offered volunteer assistance at major events such as the Gay Pride Parade and the AIDS Dance-A-Thon.

With its well-established links, Isosceles receives requests for support from a growing number of non-profit organizations. Bonick and Gay screen the requests and match the needs of the charitable groups to their clients, who decide their own level of involvement, then work with Isosceles to design and carry out the programs. Often, the link is a simple donation of product ranging from 40 to 250 cases of wine, depending on the scope of the event.

The clients receive prominent signage and advertising in the event program, free tickets to the event, and usually an easel-backed acknowledgment of their donation placed in a prominent spot on the bar or tables in a restaurant.

New projects for Isosceles clients include a joint sales program for Ramlösa and Firesteed Barbera tied to donations of $5 a case to Project Open Hand. In another cooperative venture Ramlösa and Graham's Six Grapes are working with Project Angel Food in Los Angeles.

"Phenomenal opportunities exist for pioneering companies who give serious consideration to targeting and focusing on the gay and lesbian market," Gay adds, summarizing the Isosceles rationale. "It is a viable, savvy group of consumers who have a desire for affirmation and inclusion. The companies that recognize this need and adapt their business and marketing plans to this group can make an indelible, long-lasting, rewarding impression." ■

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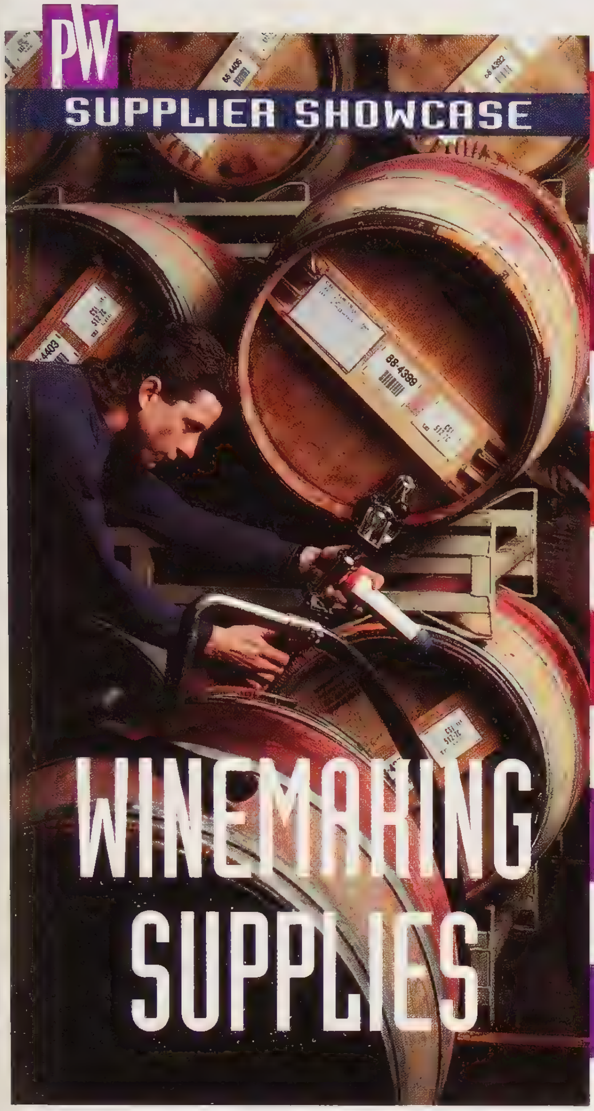

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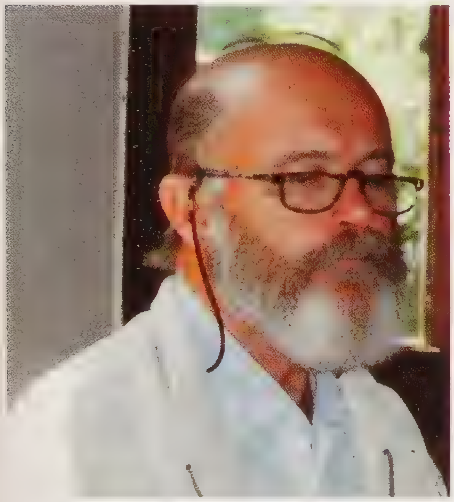

Clayton Cone, technical consultant for Lallemand

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The Wine Lab offers:

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For 23 years, the innovative, pioneering technical staff at The Wine Lab has investigated current topics in winemaking and offered the latest information on fermentation and microbiology.

Malolactic bacteria: In 1976 The Wine Lab developed the first user-friendly ML cultures. In 1992 Christian Hansen's unique free-dried culture, *Viniflora Oenos*™, made direct addition without making starters possible.

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Spoilage: Founder Lisa Van de Water's fascination with microbial spoilage and improving wine quality began with a major Brettanomyces/Dekkera outbreak in 1973. Since then, she has gained an international reputation for her work with microbes and her popular wine microbiology classes and defect tastings.

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e-mail: winelab@aol.com

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Private Bag 1007, Blenheim, NZ
(+64-3) 577-9000; fax: (+64-3) 577-9001
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PLEASE SEE THE WINE LAB AD, PAGE 87.

Watch for *PWV's* PACKAGING SHOWCASE in July/August featuring suppliers of bottles, corks, labels, capsules, and shippers.

by Dr. Richard Smart

Vineyard rejuvenation

The typical reaction to old, low yielding vineyards is "remove and replant." Year after year they can continue to produce low yields with no noticeable quality improvement.

When asked about such vineyards by clients, my first reaction is to try to understand the reasons for low vigor. Age in itself does not necessarily cause devigoration. I have seen the monstrous vine growing in London's Hampton Court Gardens that was planted in 1767. It occupies a whole glasshouse, and grows strongly.

However, not all old vines receive such love and attention. Old vines can and do accumulate pruning wounds and associated fungal diseases and are subject to many other environmental and disease stresses. There are few commercial vineyards around the world that are more than 100 years old.

In California, phylloxera infestation of own-rooted and AXR-1 grafted vines has caused an obvious loss of vigor. The solution here is to replant using a better rootstock. In some other instances, the cause of low vigor is not as obvious, yet it is very important to find out why it's occurring. After all, how might we be sure that any replanted vineyard would not suffer the same problems as the one removed?

The following column describes rejuvenation of an Australian vineyard, which may be of interest to North American readers. Phylloxera is not yet widespread in Australia, but there are some old vineyards which are of low vigor for other reasons, which can be made profitable again. Here is a report on one suchvineyard.

Introducing High Eden Vineyards

Many North American readers will know of the Barossa Valley, a famous wine producing region about 50 miles northeast of Adelaide in South Australia. This valley has an outstanding reputation for quality red wine, especially Shiraz, with Penfold's Grange Hermitage being the most famous brand.

Less well-known overseas are the vineyards of the Eden Valley and the Barossa Ranges, lying south and east of Barossa Valley.

The Eden Valley vineyards have an enviable reputation for ultra-premium white wine quality, especially from Riesling, as well as other cool climate varieties. But they are a known source of frustration for vineyard managers. Water supply is limited, and vigor and yields are low, creating high production costs. The "High Eden Vineyards" have had a series of owners but are now owned by the Southcorp group which also includes the Penfold's label.

The own-rooted Riesling vineyards of High Eden were first planted in the late 1960s and were one of the earliest vineyards established in the district. The vineyards were planted at higher elevations (1,750 ft) to take advantage of cooler growing conditions and promote wine quality.

Row spacing was 12 feet, and vines were spaced five feet apart with a simple trellis. At the time of planting, the winds of the region were not recognized as a problem. The vineyards were planted with a southwestern exposure, which sadly exacerbated wind exposure problems, since they were open to the prevailing winds.

The soils of Eden Valley are typically acid podsols consisting of sandy loam over yellow clay. These ancient soils are very acidic and of low nutrient status.

Reasons for low yield

Many theories have been given as to the cause for low vigor and yield at High Eden, which has been a feature of these vineyards since planting. There was consensus that implicated wind, although there have been few studies about wind effects on grapevines in Australia. In 1993, P.R. Dry and Dave Botting identified wind effects on yield and growth for Cabernet Franc vines in this region. Certainly High Eden managers and workers were vociferous in their complaints that wind was affecting comfort and spraying operations, but the effects of wind on vine growth were unknown.

Soil acidity was also suspected although again, only limited data was available about these effects. Some viticulturists suspected nematodes, but while some vines showed *Meloidogyne* rootknot nematode symptoms, these were by no means universally present.

Wine quality was outstanding, but at around two tons per acre, the low yields from the vineyards were considered commercially unacceptable. Andrew Pike, Southcorp's vineyard operations manager, requested reports on the problem and development of management strategies to improve yield. This process involved the author of this column, other consultants, and Southcorp technical and management staff.

The resulting review developed no new ideas about causes of the vigor and yield problems, but found that all indications and symptoms pointed to a combination of wind and soil infertility as primary causes of poor growth. Management elected to initiate and evaluate commercial trials and management strategies designed to overcome these problems.

Trials to evaluate soil problems

Soil testing showed that soils were very acid, as low as pH 4.8. Aluminum levels were high, as would be expected with this acidity, and undoubtedly toxic. Low levels of the nutrients N, P, K, S, Ca, Mg, Cu, Zn, Mn, and B were also noted. The soils also show high levels of sodium along with low cation exchange capacity, causing a potential structural problem.

Making applied nutrients available to the vine roots, as well as incorporating the lime was a problem. A proposal was made to put fertilizer and lime onto the row middles, and to mix thoroughly by rotary hoe cultivation to a depth of about 10 inches. This well-ameliorated soil was then thrown up as a bank under the vine rows. To avoid root damage, only one side of the vine row was done the first year; the second side was done the second year.

The undervine banks were formed using a three-point linkage attachment, known as a channeller or delver, which can be used to create under vine banks very precisely, much more so than with a grader blade.

A composite fertilizer was used at 390 lbs/acre, which contained N-P-K-S of 0-5-21-5, and 0.5% B, 0.6% Cu, and 0.6% Zn. Urea was also applied at 90 lbs/acre, and lime at four tons/acre.

A commercial trial was established in 1993, using whole row units with a "buffer" row on each side. The trial aimed to distinguish between the effects of liming to overcome acidity, mounding to improve the potential rootzone, and fertilizer to overcome nutrient deficiency.

Unfortunately, the trial was begun in the middle of the growing season, but initial results were encouraging. Shoot growth stopped in the control vines in January, but growth continued through March where mounding had taken place producing two- to three-fold pruning weight increases. This in turn led to improved yields the following season, with increases up to one ton/acre. These improvements in growth and yield have been subsequently maintained and even increased.

Development of commercial soil management practices

In the early stages, it was not evident if mounding, liming, or fertilizing had the most benefit; all seemed to improve growth and yield over no treatment. Therefore vineyard manager Allen Jenkins decided to evaluate soil amelioration and mounding on a larger scale. A 50-acre block was converted, beginning in 1994, and has taken several years to complete.

Allen developed a procedure in which first, the dripper wire was lifted to 16 inches above ground. (Otherwise it would be buried by mounding.) The following were broadcast over the vineyard floor: lime at four tons/acre, poultry litter at 2.4 tons/acre, and the blended fertilizer at 360 lbs per acre.

The amendments were disked in 10 inches deep (sometimes chisel ploughs were needed) and thoroughly mixed; the soil was thrown up under the vine using the delver. Again two tons/acre of lime was spread, and the row middle disked again. A cover crop of cereal rye seed was then sown at 90 lbs per acre, followed by superphosphate at 90 lbs per acre. The mound is kept weed-free using herbicides.

Total cost of this procedure was $180US per acre, which was much less than the value of the extra fruit produced. Average yield for this block increased by 40% for the three years following conversion, compared to the previous five-year average. Remember, these vines are still affected by wind stress, making the response all the more incredible.

The one-time cost of the soil improvements is less than one-quarter of the annual value of increase in yield! Naturally enough, encouraged by these responses, Allen has converted most of the vineyard over to improved soil management, and the overall yield and vigor have responded correspondingly. He has found that roots colonize the mounds in the first year, obviously the reason for the improved vigor.

Trials to evaluate wind protection

The consultants also suggested that a trial be installed to determine effects of wind on vine growth and vigor. An artificial windbreak made of cloth was installed in October 1994. This was 10 feet high and 100 feet long, and the test variety was Riesling. The windbreak was not designed as a commercial structure but was intended to prove what damaging effect, if any, the wind was having. Test vines were measured in rows outside and behind the windbreak.

The results were once again dramatic. Measurements showed that the shelter reduced windspeed by 40%, and that there was a large effect on vine vigor. Vines affected by wind stopped growth earlier in the season, and shoot length was about half that of the protected vines. Yield over three years from exposed vines was 3.1 tons/acre or 1.6 tons/acre less than sheltered vines which averaged 4.7 tons/acre, an increase of 53%. Vigor increases were equally impressive, with per vine pruning weights increasing from 0.6 kg to 1.0 kg, an increase of 67%. Fruit composition was not negatively affected by the yield and vigor increases.

Development of commercial wind protection practices

The response to wind protection was dramatic and apparent for all to see. Allen Jenkins decided to do what was possible to reduce wind exposure in the existing vineyards.

The vineyard had been contour-planted, and some Casuarina windbreaks had been installed previously. However, these were largely ineffective, as trees were planted too far apart with many gaps and were growing unevenly in the poor soil environment. Allen set about improving the existing windbreaks. Any contour banks without trees were planted, and fertilizer and irrigation were applied to existing tree lines, along with inter-planting. There was a growth response immediately, and a vineyard benefit of wind protection followed quickly.

Allen learned about tree windbreaks in New Zealand in 1995, especially how to develop "instant" windbreaks, which was useful for High Eden. Hybrid Matsudana willows were used, as they are fast growing. Cuttings are taken in winter, but these "cuttings" or poles are up to 12 feet long. They can be stored with their base in water, and planted in early spring. The trick is to plant them close together, say three feet apart, and to irrigate to encourage early growth. In the first year there is an instant windbreak, up to 12 feet tall!

Improvement of the shelter over the whole vineyard has resulted in improvement of vigor and yield, and in combination with improved soil management, yields of this vineyard are commercially acceptable. For the 1996 and 1997 harvests, yields have improved by over one ton/acre compared to the previous five-year average. At the time of writing this column, the 1998 crop was about to be harvested, and based on vine appearance and crop estimate, this trend of improved yield will continue.

Conclusion

Rejuvenation of High Eden Valley vineyards is a prime example of how to overcome vineyard problems in a cost-effective manner. The sequence of using professional advice, problem diagnosis, installing commercial scale trials, and then developing new management procedures has been most effective and has substantially increased vineyard profitability.

I know of vineyards in North America which also have inexplicably low yields, and some of these are also on hillside sites or in windy regions, such as Salinas (Monterey County). Perhaps some of the procedures described here might have some direct application to these vineyards, perhaps not. However, this the approach to investigating the cause of low yields likely has widespread application. ■

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WINERY WATER & WASTE

by D.R. Storm, PhD. P.E.

YEAR 2000 AND THE SELF-INKING DATE STAMP

The self-inking, bottling-date stamp that I use on cartons at my Winters Winery has served us for nearly 20 years, without ever a mechanical problem. Infusing the pad with ink periodically has been the only maintenance required.

All the media attention given to the 21st century and the apparent inability of nearly all digital computers to cope with "00" or "000" or "2000" in their programmed calendar routines, inspired me to examine our carton stamp for the "millennium flaw." I was almost positive that it would become obsolete in two years or that, at the very least, the endless-belt "year" imprint was going to need replacing.

Much to my surprise, the stamp will retain its utility for centuries to come. The last two digits are separately-equipped endless belts, each with a set of numerical characters from "0" to "9," giving this device virtual immortality.

The collection of self-inking stamps which serves my Storm Engineering office seem to be more traditionally plagued with planned obsolescence. Four of the five date-print stamps of various types (progress print, change-order approved, preliminary review print, not for construction) all will require new endless belts for the next century and beyond.

To my dismay, I discovered that the self-inking stamp supply companies only provide ***complete*** *belt replacements, so the "year" belt change will also simultaneously yield sharp day and month images. New rubber for the date stamp is a little like buying automobile tires; buying a whole new set has always worked for me even when only one began to show significant wear. With such a nominal replacement cost, I may even try steel-belted Michelins this time (for the date belts, of course).*

Wet cell batteries:

The next generation and beyond

History

Since its appearance in the 1940s, the standard work-horse equipment for wineries has been the "industrial lift truck," also known as the forklift. It and close relatives, the battery-powered pallet jack and the hydraulically-actuated pallet jack, are relied upon for a variety of heavy lifting and short hauls.

While most often relegated to warehouse tasks, small wineries without fixed or mobile crane systems must resort to some sort of electric or I.C. (internal combustion) engine-powered forklift combination to dump fruit bins (bin dumpers), or to forklift-assist in tipping grape gondolas to feed the crusher-destemmer, press hoppers, and screw conveyors.

I.C. engine-powered, all-terrain-tired forklifts are frequently used for bin loading of flatbed trucks that are earmarked for longer hauls of harvested grapes. Battery-powered forklifts and pallet jacks are preferred by many wineries because of their silent and pollution-free operation. The problems and future prospects of wetcell-storage batteries and their maintenance are the focus of this column.

Lead-acid battery maintenance and hazards

Large storage batteries have a long history of being the primary source of power for machinery, such as the WW-II diesel-electric submarine, electric forklifts, and golf carts, and also as a secondary or emergency source of energy, for emergency lighting and building elevators, for example.

The very nature of the electrical-chemical processes that allow the production of direct-current electricity also requires that electrical energy eventually be returned to the battery and stored as chemical energy (*i.e.*, the charging cycle). Battery-charging rooms, whether for a winery's forklifts or a battery bank for back-up electrical supply for an elevator motor, all have hazards that must be minimized or eliminated through thoughtful design of the spaces.[1]

Standard wetcell batteries can evolve both oxygen and hydrogen gas when being charged, and if uncontrolled, these highly explosive elements can singly or in combination cause serious injury or fire. Further, the build-up of hydrogen gas can cause the unintentional discharge of the battery's liquid-electrolyte sulfuric acid through the fillercap-vent holes. This is a highly corrosive chemical capable of permanent eye damage and second-degree burns at the concentration usually found in wetcell chambers. The risk factors for battery maintenance rooms are, in summary:

- Explosion and fire from hydrogen gas production.
- Spills and incidental leakage from the periodic addition of distilled water.
- Corrosive atmosphere resulting from a combination of high moisture content in the ambient air and volatilization and evaporation of the sulfuric acid and water mixture.
- Electrical shock hazard from medium- to high-amperage charging equipment.
- Damage and injury potential to maintenance staff eyes and clothing from battery-terminal chemical deposits, that must be periodically flushed clean with bicarbonate of soda and water.

All of the aforementioned battery-room maintenance hazards can be eliminated or mitigated to the point of insignificance by:

a) Installation of sprinklers and ventilators.
b) Use of spark-proof tools.
c) Installation of acid-proof coatings on the floors, walls, and ceilings.
d) Use of protective glasses and clothing for maintenance personnel.
e) Hard-wiring a hydrogen gas detector to the winery's intrusion and fire alarm system, which would activate when gas levels exceed a preset concentration.

It is likely that existing wineries with wetcell-battery-powered equipment in their inventories have overcome the hazards described above with a carefully designed space.[1] For new wineries that are in the planning stage, a much less complex and less expensive battery room is a possibility, if a new storage-battery type is used.

Wineries with traditional lead-acid storage batteries might want to consider conversion to the more advanced battery systems that claim to be not only maintenance-free, but for equal battery size, provide more ampere-hours of operation between recharges.[2]

Maintenance-free batteries (almost)

For wineries in the planning stage that have selected battery-powered forklifts and pallet jacks, the specification of maintenance-free storage batteries reduces the complexity and construction cost of a battery maintenance room by a factor of two or three. Eliminated or reduced is the need for:

- Automatic sprinklers for fire protection.
- Fixed-mount gas detectors and alarms.
- Distilled water replacement facilities, which saves labor and space and reduces the potential for spills and personnel injury.
- Special acid-proof floor, wall, and ceiling coatings to prevent long-term damage to other winery assets, such as pitting and spalling of bare concrete from acid spills. Acid corrosion on forklift and pallet-jack equipment is also reduced.
- Ventilation system capacity and the number of air-changes per hour for the battery room space.
- Sulfuric-acid waste drainage required to accommodate acid-concentration equalization and/or replacement activities when making pH adjustments for flooded-cell batteries.

The industrial-grade batteries that permit this maintenance metamorphosis are called "absorbed electrolyte, valve-regulated, lead-acid batteries." The batteries described under the subsection entitled "Lead-acid battery maintenance and hazards" are collectively called "flooded-cell batteries."

Absorbed-electrolyte batteries are not to be confused with so-called "gel-cells," which by means of a fumed silica additive, convert the liquid (sulfuric acid and water) phase electrolyte into a "Jello-like" composite that offers some maintenance advantages over the flooded-cell batteries, but appears to be inferior to the absorbed-electrolyte type for winery forklift and pallet-jack applications.

The initial cost for an absorbed-electrolyte battery is almost twice as much as an equivalent flooded-cell battery of the same cold-cranking amperes (CCA) and ampere-hour performance.[2] Suppliers and manufacturers of these new and improved sources of direct-current (d-c) power would be happy to detail the lifecycle and annualized cost differences, so that a winery can make an informed judgment on their suitability for long-term use.

For further information on the absorbed-electrolyte systems in California, contact:

Philip Matheus
Electrorep Energy Products, Inc.
2535 Front St., West Sacramento, CA 95691
tel: 916/373-3963; fax: 916/373-3961

David Storm is a consulting environmental and civil engineer, specializing in winery utility systems, the owner of Winters Winery, Inc., and the author of the reference textbook Winery Utility Systems: Planning, Design & Operation, *Chapman and Hall, NY, NY, December 1996.*

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THE WINE LAWYER

by R. Corbin Houchins

Coordinating trademarks and appellations

Richard Mendelson's acticle on appellations in this issue ("International Establishment and Defense of Appellations," page 39) is a useful reminder that globalization of trade affects all businesses, including those with no plans to export, and that appellations of origin can be assets worthy of strengthening and defending.

Names of vineyard and processing locations raise intellectual property law issues for every aspect of wine marketing. Let's look at some intersections between trademark law and the rules applied to indications of origin, indulging in a little speculation on how one might strengthen appellations as they are used for U.S. wine.

Implications for label clearance

Richard's observation that "trademark rules don't control the use of geographic brand names on wine labels" is true in the sense that they do not provide controlling principles for issues that are properly resolved under the labeling statutes and regulations of the country where the product is offered. On the other hand, indications of origin are established, used, and protected in a marketing context that requires consideration of trademark law.

Simply put, a wine label must pass muster under both systems wherever it will be used. Thus, traditional forms of clearing a proposed brand name — such as having some outfit in Washington, DC, check records of the Patent & Trademark Office (PTO) and the Bureau of Alcohol, Tobacco & Firearms (ATF) — are insufficient. The brand owner also needs to know whether the brand name is similar to trademarks or indications of origin in other countries.

For example, Palette can be approved as a brand for American wine, even though it would be misleading if the label implied origin in the Palette region of France. However, before investing in it as a global or major domestic brand, one would have to consider its incompatibility with European Community (EC) regulations and also the possibility that at some point the U.S. might give in to French complaints and phase it out.

Do the same considerations apply to persons contemplating a petition to establish an American Viticultural Area (AVA)?

Not exactly. Under U.S. law, use of a word or phrase to describe an actual characteristic of a product (such as its geographic origin) is not trademark use and does not necessarily infringe use of the same word or phrase as a non-descriptive brand name. An Italian automaker can put "Torino" on its cars as the place of manufacture without infringing the Ford Motor Company's non-descriptive "Torino" trademark.[1] Practically, however, it seems sensible for an AVA petitioner to follow the same kind of clearance procedure.[2] Although the name of an

AVA is, by regulatory definition, one already in use as a descriptive geographic reference (and therefore not a trademark), the trademark clearance search can provide useful marketing information. If there is more than one name that would qualify as "locally and/or nationally known," the search results could influence the choice on non-legal factors.

Furthermore, one can imagine trademark use of an AVA name — for example, by a quality alliance as a brand name for wine accessories. In such cases, the AVA would be more valuable if it could pass trademark clearance.

Another reason to globalize the clearance process for trademarks is that if a winery clears a brand name as a trademark here, begins using it, obtains a federal registration, and is in fact the first to use the mark in the U.S., under certain circumstances it could still be vulnerable to infringement claims when an overseas mark arrives on our shores. The situation occurs rarely but can be devastating when it does, and it would apply to collective and certification marks (which we will examine below) protecting indications of geographic origin as well as brand name trademarks.

Here is the scenario: A California winery obtains a trademark screening search for a proposed brand name. The search is clean throughout the U.S., but there is a winery in France using the same name on a product that has never been imported to the U.S. The French wine is not found in the search or is ignored.

The French user files for a registration in France the day before the California winery files its intent-to-use application in the U.S. Almost six months later, the French company decides it will sell wine to a New York importer and applies for a U.S. registration. Meanwhile, the California winery has released the product, filed its statement of use, and is on its way to trademark registration and fame — until everything comes to a halt because of the French company's priority date, which for intent-to-use applications is determined by filing date. The French company's filing dated is, by treaty, the same in the U.S. as in France, for applications filed here within six months of the foreign application. Thus the filing is backdated to the day before the California application, and the French company (which has not even shipped wine yet) will have the senior use date in the U.S.

Other uses of appellations

Another practical question is the extent to which increasing protection of appellations affects such uses as comparisons and viticultural references in advertising or back label copy.

Years ago a Northwest winery promoted a running event with the claim that the course was located on the same latitude as the famous Boston Marathon, a gentle poke at the then-emerging wine region's marketing tactic of borrowing some luster from the Bordeaux region. At the time a "same latitude" claim appeared on labels with ATF blessing.

The back label map showed the upper left corner of the U.S. on the same parallel with Pauillac. It was not regarded as misleading under the Federal Alcohol Administration Act because the true appellation of origin appeared on the brand label, and the reference to Bordeaux was expressly a comparison, not a claim of origin.

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[1] *Interestingly, Ford has allowed the Torino trademark registration to expire for cars, but not for toy cars, a market where it may live forever. Secondary product use can be relevant in any industry. For example, the buyer of an old winery might want to retain rights in a pre-Prohibition brand name for novelty items without using it on wine.*

[2] *It would be essential for establishing an Australian geographic indication, as Richard's intricate decision tree on page 40 shows.*

Not being misleading is usually good enough for U.S. label approval, but the same is not true in all markets. Anyone wanting a global package would have to look out for laws (not necessarily limited to the country of the geographic reference) that forbid *any appearance on a label* of words constituting an appellation of origin to which the product is not entitled.

Extended uses of trademarks

Marketers interested in creativity and innovation will find trademarks a more flexible medium than appellations.

An essential element of trademark law that need not collide with AVA regulations or other label requirements is the right of merchants to make up fanciful and non-misleading indications of *producing* origin (a winery or other brand owner) or *certifying* origin (*e.g.*, a quality alliance), as distinct from *geographic* origin (*e.g.*, an appellation), and use them on the package. Non-descriptive indicators of origin are, primarily, brand names. What makes a brand name like Kodak or Cadillac a trademark is that it tells the consumer the product came from a particular source that is responsible for its quality, but does not describe the product.

Not all trademarks are brand names. A logo, a slogan, the over-all appearance of the package, or any other symbol or device can be a trademark if it says, in effect, "This is the product of a particular producer."

Fanciful trademarks can blend characteristics of slogans and geographic indicators. A brewery that had long featured "artesian water" on the label created an advertising campaign around a mythical place, Artesia, with inhabitants known as Artesians. Their use to promote a beer from a specific producer created trademark rights in the terms, which, incidentally, passed regulatory scrutiny.

There is no reason why a winery could not create and hold trademark rights in a phrase that *suggests* an appellation of origin without actually being one under regulations. That does not, of course, eliminate the need to avoid infringement of others' trademarks and to comply with label rules, including those against "erroneous impressions" as to origin. Certainly any such label should prominently display the real appellation of origin (which has to be there anyway if the wine is vintage dated, if the brand name has geographical significance, or if the label indicates estate bottling or uses a varietal or semi-generic name in place of the wine type).

The regulatory sense of humor has its limits, of course. I am not sure one could obtain federal approval for a label containing "appellation Narnia controlée," even if the true appellation were clearly stated, but it would be interesting to try.

A different kind of mark

Perhaps of more practical interest than fantasy regions are the possible applications of collective marks and certification marks to AVAs.

A collective mark identifies the individual producer as a member of the organization that owns the mark. Standards for using the mark can be a simple as paying dues. A certification mark is a symbol or device used by a person other than its owner to certify regional or other origin, material, mode of manufacture, quality, accuracy, or other characteristics of such person's goods or services.

Of greatest interest here are certification marks indicating that the goods originate in a specific geographic region (*e.g.*, Roquefort for cheese or Cognac for brandy). The message conveyed by a certification is that the goods have been examined, tested, inspected, or in some way checked by a person who is not their producer, by methods the proprietor of the mark determines.

Certification mark proprietors have broad discretion in setting standards, but the mark is not properly protectable if the owner (A) does not control, or is not able legitimately to exercise control over, its use; (B) itself produces or markets any goods to which the mark is applied; (C) permits the use of the mark for purposes other than to certify compliance with the standards; or (D) discriminatorily refuses to certify or to continue to certify the goods or services of any person who maintains the standards the mark certifies.

"Control" means taking steps to assure that the mark is applied only to goods that meet the specified requirements for certification. The standards may be, or include, specifications promulgated by a government agency, such as those describing an AVA.

Upgrading appellations

An intriguing question about certification marks and other legal avenues to quality control is whether they could be used to move the significance of an American appellation toward that of an AOC.

Theoretically, it might be possible to create systems of legal obligation paralleling ATF appellation laws and incorporating specifications in, say, the seven EC subject areas. Why would one want to?

Globalization suggests one answer: to present something equivalent to European AOCs in markets where such appellations are perceived as advantageous. Another is that in all markets, especially the domestic; wine suffers from such brand proliferation that almost any positive means of differentiation may have utility.

Such rationales are more likely to interest groups of smaller brand owners than large marketers with access to more direct methods. They may be contrary to contemporary emphasis on brand development in any case. Moreover, they are not adapted to all marketing methods. For example, the requirement that the certification mark owner refrain from producing or marketing products under the mark would affect the ability of a proprietor trade association to present a benchmark certified wine, such as the 1985 Pinot Noir released under the name of the Carneros Quality Alliance itself, or to offer wines from individual members as exemplary of the appellation, such as the Stags Leap District mixed case.

Still, it seems a useful exercise to speculate.

One distinction to draw at the outset is between a certification mark referring, but not identical, to an appellation and a certification mark that is the appellation itself. The former — say a distinctive seal with a motto conveying something equivalent to "Napa Supe'rieur" — could be used like any secondary brand name by those who chose to meet the specifications. The latter would restrict the AVA itself to producers who met both the federal regulatory requirements for its use as an appellation on the label and the certification standards.

As it stands, most industry members and probably most regulators regard a name listed in the ATF roster of American AVAs as a public resource, free for the use of anyone whose product content meets the winegrowing and processing location requirements set forth in the law. Is there some way to attach the quality standards to use of a governmentally recognized AVA?

What if?

There is no minimum size for an AVA.

Given that a 503-acre pocket along Highway 253 in Mendocino County is no less deserving of AVA status than a group of counties,[3] one might imagine a compact appellation where all the property owners agree to require something more than location for use of the name. How would they deal with the right under federal labeling law for anyone whose wine meets the 75% fruit and locally "fully finished" requirements of the ATF regulations to use the AVA name as an appellation?

Doubtless a land use specialist could come up with many ideas, but looking only at traditional ways neighboring landowners limit one another in the use of their property, a couple of avenues appear: restrictive covenants and improvement districts.

Restrictive covenants are the device by which neighboring landowners have long achieved uniformity in areas that concern them. Residential use, minimum lot sizes, access to common areas, and other features often associated with zoning by public authorities can in many cases be achieved by private contract.

The key difference between an ordinary contract and a restrictive covenant is that the latter can be drawn to "run with the land," meaning that the property owners can thereby bind not only themselves but future owners as well. There is no reason why a group of property owners could not agree to bind themselves and their successors in the land to a covenant specifying that if the land is used for wine grape production, the fruit must meet certain standards.

One obvious drawback is that it would be difficult to calculate the effect on property values, short or long term. Because standards might not stand the test of time, probably an additional complication would be needed in the form of some kind of organization to set and maintain them and to hold the certification mark if one were obtained. The restrictions themselves and control of the organization could, over time, become targets of litigation, with the potential for more headaches than the exercise was worth.

Whether enhancement of reputation, and consequently of price per ton or per case, occurred at all or in enough measure to compensate for the drawbacks is something only time would tell. But the approach is inherently a speculation for a small group and consequently for "pocket appellations."

Improvement districts are creatures of law that could encompass larger areas and do not depend on unanimity. They do, however, involve political processes that are far costlier to orchestrate than covenants and may be unlikely to produce results in all but the least controversial restrictions.

Indulging in the assumption that a vineyard improvement district could be created, with the objective of setting standards for wine analogous to those of an AOC, then such a district could raise funds for its work by assessment, own a certification mark, and control its use.

Official and unofficial appellations

A hypothetical Mythic Valley Vineyard Improvement District could, in theory, either work with an existing or proposed AVA, or adopt any name and geographic boundary (not limited by the ATF separation factors applied to AVA petitions) as the basis of a certification mark.

If it chose to work as an AVA, then a threshold question would be whether to require all producers in the area to produce to standard or merely limit use of the AVA as an appellation to those who met the standard. The latter, which is of course more in line with what most people who want an AOC system have in mind, would probably be limited to carrots and/or sticks of an indirect nature, to reduce the swarm of serious legal questions that would arise from a local quasi-governmental entity's putting qualifications on use of federally recognized names.

If Mythic Valley were not an AVA, then the marketing and legal challenge would be to get it recognition as an indication of origin equivalent to an official appellation. For that, a certification mark would prove helpful, both domestically and globally.

As Richard suggests, enhancing the information content of appellations makes them more meaningful for consumers. Intellectual property created in the process would contribute to the objective most of our business efforts are aimed at — increasing the asset value of brands. ■

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[3] *While the mandatory use of "district," which Richard suggests on page 47, might not be justified on appellation size alone, it would certainly help the consumer if it applied to all appellations that are not readily identifiable as a political subdivision or a geographic area.*

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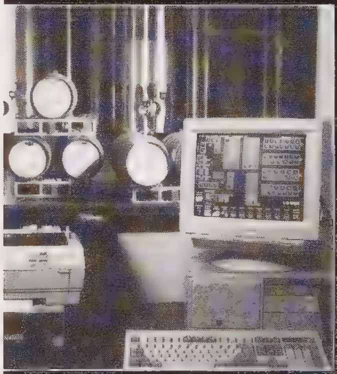

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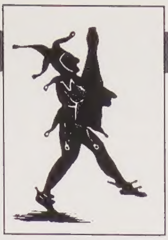


by *Jake Lorenzo*

A European tasting

"Dammit, Iggy. Are you trying to kill me?"

"Jake," says Dr. Iggy Calamari, "are you wussing out on me?"

"You've got a lot of nerve, Iggy. Being a wuss is one thing, but we've been eating and drinking enough to feed a small village."

"I know, I know," says Dr. Calamari, inventor of the wine-powered pacemaker. "It's the French paradox in action. You make a great medical subject, and you're helping me make money.

"This is the best research gig I've ever had," he continues. "Basically, I invite friends to great restaurants where we eat and drink as much as we can. I do a few simple blood tests, make astute observations that inevitably imply that wine is good for your health, and then the Wine Institute spends millions publicizing my research, not to mention putting me up here in Paris."

"It's old news," replies Jake Lorenzo, private eye. "I don't even open the mail from the Wine Institute anymore. Their press releases sound more like medical journal rehashes than wine news."

"It's not my fault," whines Iggy, "I'm not about to kill the goose that laid the golden *foie gras*. Besides, the Wine Institute is picking up the tab."

"Fine Iggy," I say. "Do what you have to do, but there's no way in hell we're ordering fromage."

Iggy grins, "Suit yourself, Jake. We'll skip the cheese, but you'll have to try a bit of the crème brulée. I've got a whole new research program dedicated to egg yolks. Those egg people have gotten a bad rap from the medical community over this cholesterol thing. They've signed me on to turn that perception around. Besides, this wine thing won't last forever."

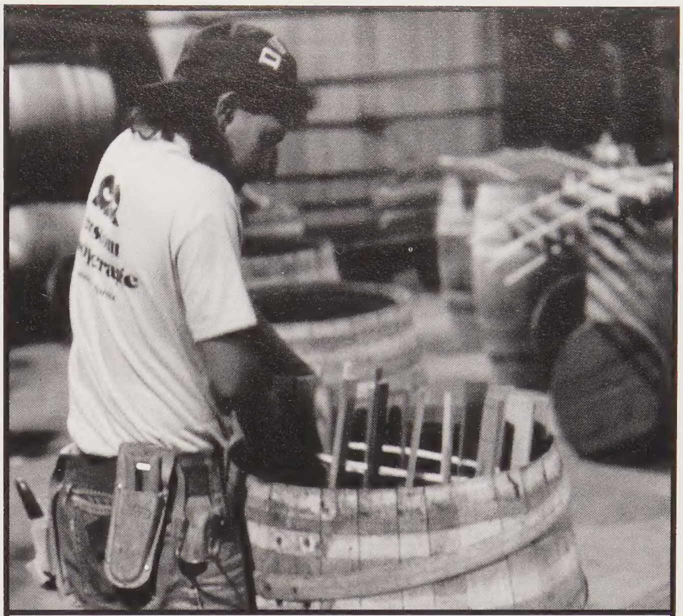
After feeding me to the point of bursting, and then the next day taking enough blood to deflate me like a balloon, Dr. Calamari stuffed me into his silver Citroen and we took off for Belgium.

"Now, listen to me Jake. Belgium is the land of beer. We'll be drinking stuff that makes Guinness taste like water. Their beer is like 12% alcohol, so three or four of them give you a pretty good buzz. Strictly as a prophylactic measure, I'm going to take you to lunch, so you don't have to drink on an empty stomach."

"I can't do it, Iggy. I can't eat again. You almost killed me last night."

"That's the beauty of Belgium, Jake. We won't be messing around with rich foods, or heavy sauces. We'll just have a bowl of mussels. Fresh, in a nice broth, they'll be perfect. Of course, they always come with a plate of fries, but then fries were invented in Belgium, and you've got to go with the flow, right?"

Jake Lorenzo is no idiot, and I know that it's useless talking to Dr. Calamari when he's like this. If he wants to eat mussels and fries, while we pound a few beers, I'll humor him. After all, he's the one who wrangled me an invitation to one of the best wine tastings in all of Belgium: Wijnagentuur Vincent.



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INNERSTAVE, A CUSTOM COOPERAGE PRODUCT

This tasting, held every other year, is hosted by Marc and Anneke Buelinckx. They and their company, Wijnagentuur Vincent, have put together a remarkable portfolio of wineries from little known regions of France and Italy. Marc is thin and wiry and seems to hover in space with a barely controlled energy. His wife, Anneke, appears to be the calming influence until you get to know her and recognize that she shares Marc's high-speed obsession.

And that obsession is wine — good wine for a very reasonable price. Wine with character, delineated flavor, firm structure, and fair prices. Wines that perfectly represent their regions of origin. Wines that seamlessly enhance the local cuisine. Wines that make an evening, or long afternoon, while barely denting your pocket book. Delicious wines, that are—have I mentioned this—incredibly cheap. Kermit Lynch, eat your heart out. Bobby Katcher, ain't even close. When it comes to knowing great wines at incredible prices from places no one's ever heard of, Marc Buelinckx is the man.

A wine tasting in Belgium is refreshing. No one talks about how good wine is for your health. People are too busy smoking cigarettes and eating paté. Rows of tables spread through the giant room. Each table represents a different winery, and the owner of that winery proudly stands behind that table pouring his wares.

Some of Marc's finds, such as Clavel and Laffitte Teston, have been discovered by the likes of Robert Parker and Stephen Tanzer, but they still come to the Belgian tasting. It's more a sign of respect for Marc and his faith in them than a genuine attempt to sell wine.

The wines are fantastic. There's a tremendous cherried Roussillon from Forca Real, a powerfully delightful Montpeyroux from Domaine Saint Andrieu made entirely from Mouvèdre grapes. Another Roussillon from Domaine Mas Cremat exudes fruit and good acidic structure, until the Pic Saint Loup from Chateau L'Euziere fills my tastebuds with unctuous fruit. The Madirans attack with their barbed tannins, but the rich cloak of ripe fruit and earthy texture prove too seductive to scare me off. There is a Bandol from Domaine La Tour du Bon that is a revelation, and a Côtes de Duras from Chateau Moulière that could single-handedly make the region famous.

Jake Lorenzo has himself one hell of a good time. Oh, and by the way, each of these wines retails in Belgium for under $10 US.

That night, Marc and Anneke take the whole bunch of us out to dinner. Vignerons from all over France and Italy pass each other their wines and tell stories about harvesting grapes and fixing broken equipment while having a fine meal. These are not people who dine in fancy restaurants. They eat great food at home and in their villages. These are not people who spend fortunes on bottles of famous wines. They drink wonderful wines made with their own hands from their own grapes grown on their own land.

Selling wine is more than just business for these people. It is essential if they are to continue their very way of life. Marc and Anneke Buelinckx found them, encouraged them, and sold their wine when nobody wanted to buy it. They helped contribute to the survival of the vignerons' way of life.

Jake Lorenzo hopes there's a Marc Buelinckx somewhere in America. I hope he's out there talking to growers we don't yet know, encouraging them to make wonderful wines at fair prices. I hope he's teaching them that a way of life may be of more value than succeeding as a great American business.

If you are out there, I wish you'd get in touch with Jake Lorenzo, because I'd love to support someone making honest wine for an honest price for the everyday table. Until then, God bless you, and drink Belgian beer. The stuff is incredible.

But right now, I've got to defend myself. Dr. Iggy Calamari has just entered the restaurant with a four-foot cart filed with a gigantic crème brulée. He can do whatever he wants to all these winemakers. He's not taking my blood again. ■

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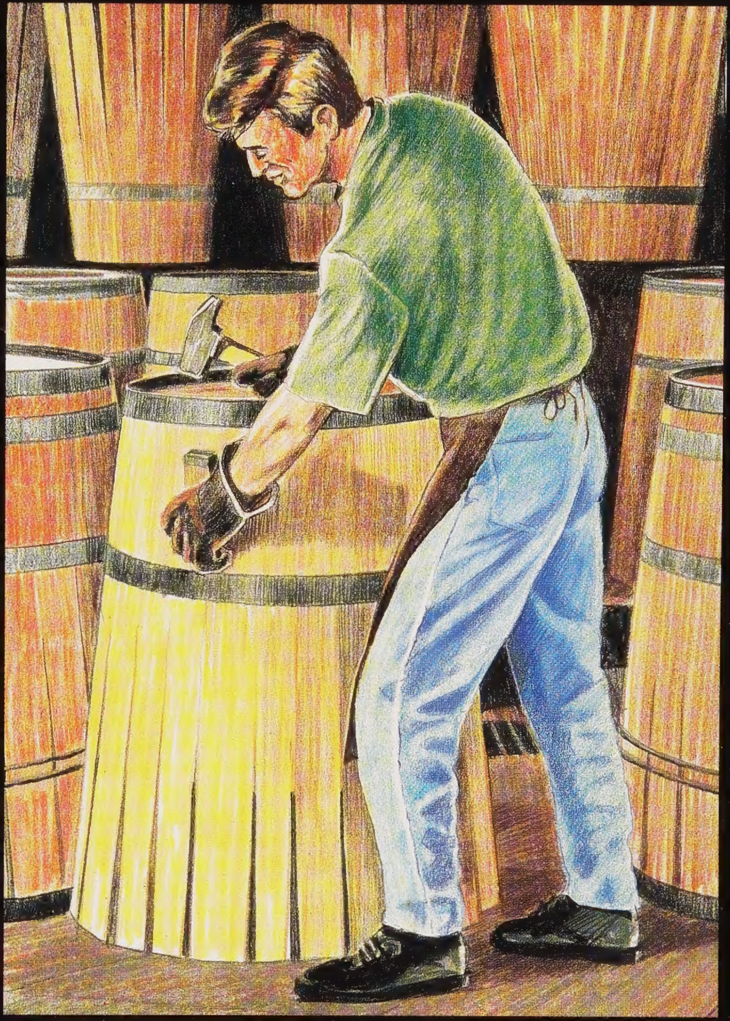

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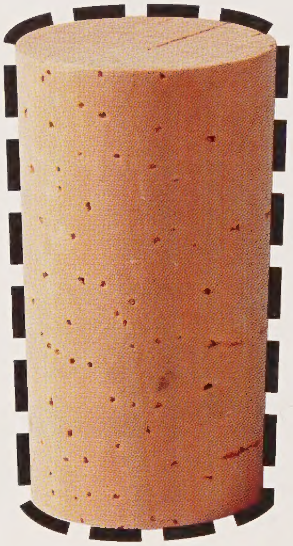

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